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THE SCHOOL JOURNAL



A. S. BARNES & CO.

NEW YORK CITY

Vol. LXXVIII No. 3

NOVEMBER, 1910

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SOME FEATURES OF THE NEW NATURAL GEOGRAPHIES

- ¶ The central thought is Man, and the Earth is studied as his dwelling place.
- ¶ Throughout the treatment emphasis is laid on industrial, commercial, and political geography, with just enough physiography to bring out the causal relations.
- ¶ The text is clear and explicit.
- ¶ Simplicity is everywhere regarded of primary importance, and technical terms have been avoided wherever possible.
- ¶ The subject is developed upon a definite and natural plan, and in accordance with approved pedagogical principles.
- ¶ The pictures, which have been reproduced directly from photographs, are distinguished for their aptness and perfect illustrative character.
- ¶ Two sets of maps are provided, one for study and the other for reference.
- ¶ Corresponding study maps are drawn on the same scale, and therefore prevent the pupil from forming the usual misconceptions regarding the comparative size of countries.
- ¶ On the physical maps, the relief features are shown by contour lines in the manner now used on the best topographical maps issued by the government.
- ¶ The graphic diagrams and diagrammatic maps make easy and interesting the learning of the necessary statistical matter.
- ¶ The topics for Oral and Written Work, the Exercises in Correlations and Comparisons, which have been inserted at convenient intervals, not only serve as reviews, but are so framed that they stimulate thought and lead the pupil to view what he has learned from a somewhat different standpoint. They form a nucleus for the "laboratory work" now recognized as an essential feature in the study of geography.

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JERSEY CITY, N. J.

THE SCHOOL JOURNAL

A Monthly Journal of Education

OSSIAN LANG, Editor.

Vol. LXXVIII.

November 1910

No. 3

Wanted: A Leader

We need a leader. Of leaders we have a few, and of leading educators there are many. But we lack a leader. A leader such as Horace Mann was, as Colonel Parker was.

G. Stanley Hall was the general of a mighty army at one time, then he went back to the plough, and that is where he is now. John Dewey led us up to the brow of a high hill, to show us a domain of glorious opportunities, and there he left us. We are grateful to him for the vision, and only wish he had stayed with us and helped us to achieve.

William L. Tomlins went up into the mountain heights and told of mysteries seen, and their bearing upon the education of the young, for the greater glory of mankind. He may yet attain to the leadership. We need one who can stir the hearts of teachers to high resolves and fill them with determination to breathe the breath of life into the earthen forms of education.

The teaching profession seems to have run into a blind alley. A few short years ago the air rang with battle cries. Learning by doing, self-expression, child study, apperception, correlation, character-formation, many-sidedness of interests, socialization of the individual, saving the individual from social absorption, culture-epoch progression in school programs—these and many other ideas contended for the place of precedence at the head of the pedagogical table.

The routinists were alarmed by the stir and strife. Trembling with apprehension lest their cherished easy-chairs be taken from them to feed the bonfire of enthusiasts, they offered a stubborn resistance to every movement of advance. Every thrust one progressive aimed at another gave cheer to the routinists. The coming on of age, ridicule, discouragements, business interests, and the fleshpots of good-fellowship among good fellows thinned out the battle ranks. Comfortable and well-paying berths, with "obligations" attached, persuaded some of the leaders of the remnant. And then came the evening.

We need a leader. Great and grave questions are awaiting solution. Chief among them

is the problem of moral-religious instruction of the children in the common schools. There are indications that children will be withdrawn from these schools to an increasing extent, unless a satisfactory solution is put in operation. The growth of the Catholic and Lutheran schools is a menace to that working together of children of all creeds which the future welfare of our country demands. Segregation is antagonistic to that perfect understanding of one another and the laboring together for a common cause which is essential to the success of a democracy such as ours. Episcopalians are beginning to favor the establishment of parish schools. At the joint meeting of the house of bishops and the house of deputies held at Cincinnati, on October 17, a deficiency of the education in the common schools was made the basis for arguments in favor of the segregation of Episcopalian children from the rest of the country. We must stand firmly for the common schools as a fundamental article of our national creed, by doing everything in our power to leave no excuse for the withdrawal of any children. A wise solution of the ethical-religious problem would strengthen the institution.

We need a leader. The larger social and civic opportunities inherent in the common school must be utilized more fully for the nurture of the higher life of the people. The common school must become more generally than it is now, in the truest and fullest sense, the educational, cultural, civic, social center of the community surrounding it.

We need a leader. School programs must be given purpose. It must be evident that the schools aim to equip their pupils for efficiency in life. Practical preparation for meeting the real problems of the plain man or woman amidst the economic, civic, and social situations in which they may be placed, must become a reality. Industrial phases must receive the larger share of attention. Training for effective citizenship, for household management and parenthood must become recognized as prime essentials. The three R's and their appendages must cease to be an end in them-

selves. By the use that is made of these tools the schools shall be judged.

We need a leader. Splendid work is being done along many lines, in many places. But charlatanism has made wasteful display stand for substance. Genuine merit too often goes begging. Efficient service is not always accorded suitable recognition, and the blue ribbon sometimes is awarded to hollow pretense. The difference needs to be pointed out courageously and authoritatively. The good must be commended publicly, that it may spread and grow.

We need a leader. Machinery has invaded the school domain. The grinding of many wheels, and the perfect fitting of parts, are not necessarily indicative of the harmonious working together of human hands and minds and hearts. Spirit is not regulated by the clock, nor commanded by general orders. The spider net with the watchful insect in the center, ready to rush at anything that may disarrange its meshes, should not be a model for school organizations. The teacher deals with human individuals. The teacher is herself a human individual. So is the principal. The distinctive characteristic of a human being is self-determination—greater or less, according to the stage of development. And that implies self-expression, initiative, self-realization. Gunning artificers have forged chains with which to bind pupils and teachers, and the number of slaves is large. We need greater freedom, we need the breath of life in schools. We need a stirring of the hearts for the greater good of humanity. Who will free us from the yoke of routinism?

We need a leader.

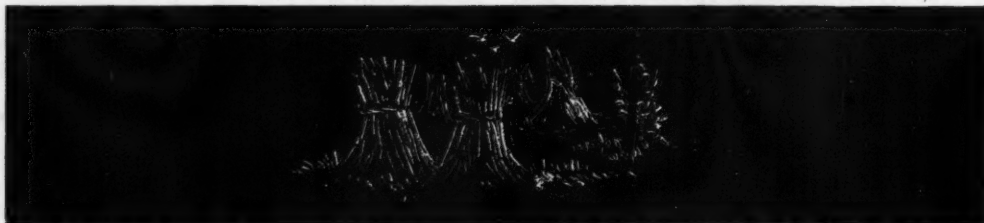
Dr. Luther H. Gulick is doing effective work for the development of a true American program of physical culture. He has caught the spirit of our needs and brings to his work a technical equipment that is rarely found even among the leaders in the physical culture field. His most recent contribution to educational literature is a remarkable book on "The Healthful Art of Dancing." Here he has gone to the very heart of things and has shown in his own interesting and admirably convincing manner how dancing is suited to the development of joyous self-expression. Dr. Gulick's book will help on the good cause.

"Amerikanisches Volksbildungswesen" is the title of a most interesting book written by Wilhelm Mueller, for many years principal of a Cincinnati school, and published by Eugen Diederichs, at Jena. Here for the first time the full scope of the social significance of public educational endeavors in America is brought out for the benefit of the German-speaking friends of the schools. The book is heartily commended to SCHOOL JOURNAL readers. A fuller notice will appear in a later number.

Oswyn P. Conant, long associated with Ginn & Company, died at Divonnes-les-Bains, France, early in October. He had been in failing health and had been under treatment in France since last June. Mr. Conant was born in Massachusetts, and was graduated from Dartmouth in 1879. For several years he was superintendent of schools in Framingham, Mass., and he was also principal of the high school in St. Albans, Vt.

William Holman-Hunt, founder with Dante Gabriel Rossetti and John Everett Millais of the Pre-Raphaelite movement in English art, died in London September 7th, in his eighty-fourth year. Among his best-known pictures are "Finding of Christ in the Temple," in the Fine Art Gallery at Birmingham.

The twenty-first annual meeting of the Eucharistic Roman Catholic Congress was opened in Montreal, September 6th, by Cardinal Vincent Vannutelli as the personal representative of the Pope. Among the distinguished churchmen present at the congress were Cardinal Logue of Ireland, and Cardinal Gibbons of the United States. One of the most striking addresses of the congress was delivered by Father Bernard Vaughn of England, on the 8th, on "The Eucharistic Life, the Antidote for Modern Life." An out-of-door Mass was celebrated on the 10th, at which 150,000 persons were present. On the 11th, the congress was brought to a close with religious services which included the bearing of the "host" thru the streets by Cardinal Vannutelli, followed by the two other Cardinals, one hundred and fifty Archbishops and Bishops, and more than two thousand canons, abbés, priests and friars, all on foot. Nearly a half million persons knelt as the "host" passed.



Cheerful Confidences

The Teacher's Tiring Tongue

There used to be a sensible man out here by the name of Frank McMurry. We lost him. He trapped off East, to leaven the cynical lump of education in New York. It is remarkable how the effete Atlantic States prescribe for their pedagogical paralyses our Russells and Sneddens, and Suzallos and 'Gene Smiths and Brooks and Van Sickles. If this thing keeps up there will soon be none left but me and Jim Greenwood and Mrs. Young. Will Elson is moving eastward. Charlie Kendall did it and then reformed.

When I was a boy we used to get our schoolmasters from New England, but what do you think of our sending a president to the University of Maine, and a professor of education to dear old Yale?

Let me see. Where was I? Oh, yes. Frank put an idea into our superintendent's head, and our superintendent called us together and talked to us. This is what he said:

We must stop talking so much. The only way to educate children is to have them learn thru self-activity. They can't get and practise in expression if we are talking to them all the time. "Telling is not teaching," this man said. "Talk less and listen more," was his admonition.

This all sounded good to me, so I went back to the little school I was principal of, and had a teachers' meeting. I talked to those women an hour upon the impossibility of teaching children by talking so much.

"Their minds," I said, referring to the children, "drop down to a low amperage of efficiency two minutes after you begin to talk. The main reason why teachers get so tired is because they talk so much. The tongue muscle gets its nerve supply from a reservoir so close to the main nerve trunk that it exhausts the system sooner than any other muscle in the body. An hour's talk wearies one more than a three hours' walk. Think of that. There are many well-authenticated cases in the annals of medicine to show nervous prostration brought on by use of the tongue and cured by keeping the patient from talking."

"Isn't it awful," I said, "to think that a teacher tires herself out on something that is not only of little value, but that is positively harmful to her pupils, because it reduces the amount of education the children receive in a day."

I talked to them on the wastefulness of talk. I told them not to *tell* things but to *teach* them.

Well, a day or two after, I was telling a friend of mine about this, and he asked me what effect I had produced.

"Why," said I, "they listened to me with attention."

"And took notes of what you said," he continued.

"Why, yes," I answered.

"But," said he, "what per cent of their class work is now pupils' talk, and what per cent is teacher's talk?"

"I don't know," said I.

"Then what good is your teachers' meeting," he asked, "if you spent an hour violating the principles you are laying down, and if, afterwards, you make no test of your teachers to ascertain whether they have been taught? In my opinion, you violated two cardinal laws of teaching. You didn't teach, you only talked, and afterwards you didn't test. The golden rule of teaching is, 'Be unto teachers as ye would that teachers should be unto children.'"

AN ESTIMATE OF TEACHERS' TALK

Next day I went the round of the classrooms and tried to test the teaching I thought I had taught to teachers. My, but it was hard for me to keep from talking. In every room I entered the teacher was talking. She stopped and waited for me to begin my usual harangue to the children. After I had said, "Go right on, please," and the work would get under way, I would find myself butting in and showing off my broad and deep and accurate scholarship. But after a time I learned to keep still and count the amount of teacher's talk and pupils' response.

The usual proportion was ten to one against the class.

Ten words of question; one of answer.

Most questions were asked twice. If there was any hesitancy by the boy, the teacher asked the same question in a simpler form, and thus stripped it of any thought-compelling force it might have had in the first place.

Here was my record of the amount of time taken up by teachers' talk and by pupils' exercise in self-expression:

Miss Bliss 90%, class 10%.
Miss Higham 90%, class 10%.
Miss Foote 85%, class 15%.
Miss Maxwell 100%, class 0%.
Miss Dole 95%, class 5%.
Miss Ackley 80%, class 20%.
Miss King 90%, class 10%.
Mrs. Wayburn 100%, class 0%.
Miss Taft 80%, class 20%.
Miss Hall 90%, class 10%.

Where were the ideas I had radiated at teachers' meeting? They were on the pieces of paper each teacher had covered with pencil notes. That's all.

Are you laughing at these absurdities? Go away! You are doing this every day of your professional life. The so-called teaching business is a big game of talk. We talk our children into stupidity in classrooms, and then we

go to a teachers' meeting and are talked into stupidity ourselves. We club together and hire some eminent educator to come and talk to us. We go to conventions and are talked at. We go to the great N. E. A., and it is talk, talk, talk. I have a row of great volumes of proceedings of this august body: all talk. When the Board set out to get a president of the Normal School in our county, they inquired about each of several candidates whether he was a "good talker."

Oh, stop it. We want some silent superintendents, who will devote their energies to seeing that the children are being educated; that they are learning to read, to write, to cipher and to do things. All the school inspections nowadays are observations of the teacher's "exposition," her correct use of voice, her "personality," her punctuality, her accuracy and promptness in making reports. Let us have

some superintendents of the old sort, who saw that the progress of the children was tested, and that the teacher in charge of the poor classes realized that her "personality" didn't count a picayune if her children couldn't spell.

Do you know that the Edisons, the Erics-sons, the Morgans, the Grants, the Shermans, the most efficient folks the world over, are the silent ones? Do you know that the best teachers often keep children interestedly busy the whole day long with scarcely a word? They give a nod of the head, a smile of approval, a short, searching question, and educate; draw out. That is a great art, and between you and me, it will be a lost one if something isn't done right soon to muzzle this interminable *cacœthes loquendi* of the school man and woman of to-day.

All of which is told you *sub rosa* by
THE CHEERFUL CONFIDANT.



Memory Gems for November

(Saturdays and Sundays omitted)

NOVEMBER 1

The Pilgrim spirit has not fled;
It walks in noon's broad light;
And it watches the bed of the glorious dead,
With the holy stars by night.

—JOHN PIERPONT.

NOVEMBER 2

Not as the conqueror comes,
They, the true-hearted, came;
Not with the roll of stirring drums,
And the trumpet that sings of fame.

—MRS HEMANS.

NOVEMBER 3

And the Lord o'er all the land
Opens wide His bounteous hand.

NOVEMBER 4

The storehouse and the barns are filled
With autumn's golden treasure,
The Giver of the increase sends
His blessings without measure.

NOVEMBER 7

Over the river and thru the wood,
And straight thru the barnyard gate,
We seem to go extremely slow;
It is so hard to wait!

—LYDIA MARIA CHILD.

NOVEMBER 8

Ye shall gather with one accord,
And hold, in the month of November,
Thanksgiving unto the Lord.

—MARGARET J. PRESTON.

NOVEMBER 9

Still let us, for His golden corn,
Send up our thanks to God.

—J. G. WHITTIER.

NOVEMBER 10

All this, and better, Thou dost send
Me, to this end,
That I should render, for my part,
A thankful heart.

—ROBERT HERRICK.

NOVEMBER 11

For summer's bloom and autumn's blight,
For bending wheat and blasted maize,
For health and sickness, Lord of light,
And Lord of darkness, hear our praise!

—J. G. HOLLAND.

NOVEMBER 14

O, 'tis a festival full of true joy,
Happy Thanksgiving Day,
Rendering praises men's powers employ,
Happy Thanksgiving Day.

NOVEMBER 15

With joyful praise we come again,
Our harvest treasures bringing;
Thanksgiving hymns from grateful hearts
Thru all the land are ringing.

NOVEMBER 16

Build a little fence of trust around to-day,
Fill the space with work and therein stay.

NOVEMBER 17

Surely as cometh the winter, I know
There are spring violets under the snow.

—NEWELL.

NOVEMBER 18

Our content is our best having.

—SHAKESPEARE.

NOVEMBER 21

Blessed are the horny hands of toil.

—JAMES RUSSELL LOWELL.

NOVEMBER 22

Think naught a trifle, tho it small appear;
The sands make the mountain; moments the
year;
Trifles make life.

—YOUNG.

NOVEMBER 23

The year grows rich as it groweth old,
And life's latest sands are its sands of gold.

—DORR.

NOVEMBER 24

Thank God for all His annual gifts, and this
Thanksgiving Day.

NOVEMBER 25

Diligence is the mother of good luck.

NOVEMBER 28

His home, the spot of earth supremely blest,
A dearer, sweeter spot than all the rest.

—MONTGOMERY.

NOVEMBER 29

Live within your harvest.

NOVEMBER 30

Health and understanding are the two great
blessings of life.

The Habit of Borrowing

A Playlet with a Moral

By E. FERN HAGUE, New York

1. *The Sitting-room in Bennie's home.*

2. *Bennie's room.*

3. *The same.*

The People:

1. Bennie.

2. His mother.

3. Fred.

4. Albert.

5. John.

Act I

Enter Bennie hurriedly.

Discovered—Bennie's mother, sewing.

Bennie (Excitedly).—Oh, mother! What do you think? I have an invitation to Jimmie Hayes' party!

Mother.—How very nice, my son. You will wear your new suit, I suppose.

Bennie.—Oh, no, mother. This isn't a regular kind of party. It's a Thanksgiving party.

Mother.—How delightful! I used to go to Thanksgiving parties when I was a little girl.

Bennie.—But this isn't a regular kind of Thanksgiving party.

Mother.—Tell me about it.

Bennie (Excitedly).—We are all going to dress up as the Pilgrims did in Massachusetts at their first feast.

Mother.—How delightful!

Bennie.—Yes, ma'am. James is going to be Governor Bradford. Sam Burns is Miles Standish. Will is going to be John Alden. Jennie is Mary Brewster. Alice is Priscilla, and I'm the Indian Chief Massasoit.

Mother.—Isn't that fine!

Bennie.—Isn't it jolly! But what kind of clothes would I wear?

Mother.—I will show you the picture of Massasoit.

The mother goes to a table, and, opening a book, shows the picture to Bennie.

Bennie.—What a queer dress!

Mother.—I think you will find all the things you want in the attic. That red blanket will be the very thing. You must take it to the line and brush it off. Those Indian leggings of yours are up in the attic, too. Take them to the shoemaker's and have the buckles fixed. Your Indian headdress is hanging on a nail near the window. You will have to glue in a few more feathers. Your bow needs a new string; any kind of cord will do.

Bennie.—Thank you, mother. Shall I need anything else?

Mother.—No, Bennie. Are you sure that you can remember to fix those things?

Bennie.—Yes, ma'am. Anyway, I have three days.

Exeunt mother and Bennie.

Act II

Enter Bennie.

Bennie.—Getting all those things ready for the party is such a bother. Everything is up in

the attic and everything has to be fixed. I suppose I'll have to take those leggings to the shoemaker's. It's a half-mile. No, I won't! I know what I'll do! Allie Smith has a pair. I'll borrow his! They are better than mine. Then—let me see. That blanket, mother said I would have to take it to the line. I wish I didn't have to do that. (Brightening.) I know what. Fred Young has just the kind of blanket I want. I'll stop on the way and borrow his. And—why—Johnnie had a headdress last Halloween. He takes good care of his things, so he must have it yet. I'll borrow it. Let me see, Allie's leggings, Fred's blanket and Johnnie's headdress.

Exit Bennie.

Act III

Scene. The same as Act II. The borrowed articles are on the table. Enter Bennie.

Bennie.—It's getting late. I must dress for the party. Let me see. Is everything here? Why, I forgot the bow and arrow! Now I suppose I shall have to go up into the attic and get that bow. I forgot to fix the string. It must be dark up there now and rats always come out at night. I'll run over to Jack's and borrow his.

Exit Bennie hurriedly. Enter Albert Smith.

Albert (Calling).—Bennie! I say, Bennie! Where can he be? Ah, here are my leggings! Say, Ben!

Well, I can't wait. I'll take them. I suppose I ought to let him know I came for them. I'll leave a note.

Albert sits down and writes:

Dear Ben:

Sorry I have to take my leggings. I need them for the Thanksgiving party.

ALLIE SMITH.

Alfred reads the note aloud and then folds it up and leaves it on the table. Exit Alfred, taking leggings. Enter Fred Young.

Fred (Calling).—Bennie! Say, Ben! Ben! He's out somewhere. I wish he would hurry! Hello! There's my blanket. I guess I'll take it. I can't wait. I would be late for the party. I'll write a little note saying I couldn't lend it any longer.

He sits down and writes the note.

Dear Ben:

Can't lend you the blanket any longer. I need it for the party.

FRED.

Folds the note and places it upon the table. Then, picking up blanket, exits. Enter John.

John (Calling).—Hello, Ben! Ben! I don't see him anywhere. I do see my headdress, tho.

I've got to use it to-night, so I will have to take it home. I'll just scribble a note and tell him I took it.

He sits down and writes the note.

Dear Ben:

I'm taking back my headdress because I have to use it myself at the party. JOHN.

Exit John with the headdress. Enter Bennie.

Bennie.—He said he is going to use it himself. Maybe mother will get my bow and fix it for me while I dress. Hello! Where are the things? What's this? A note? Three notes!

Opens the first and reads it aloud.

Bennie.—Well, what do you think of that?

Opens the second and reads it aloud.

He needed it for the party! What will I do?

Opens the third note and reads.

Just my luck!

He sinks into a chair. Enter mother.

Mother.—What's the matter, my son?

Bennie.—I can't go to the party. I have nothing to wear.

Mother.—Didn't you get the costume from the attic?

Bennie.—It was so much trouble that I borrowed the things from the boys and now they took them back!

Mother.—I am sorry you cannot go to the party, but Bennie, borrowing is such a bad habit!

Bennie.—I will never borrow again!

The Old Thirteen

The curtain rises on two hundred years,—
A pageant of the olden time appears.
Let the historic muse her aid supply,
To note and name each form that passes by;
Here come the old original Thirteen!
Sir Walter ushers in the Virgin Queen;
Catholic Mary follows her, whose land
Smiles on soft Chesapeake from either strand;
Then Georgia, with the sisters Caroline,—
One the palmetto wears, and one the pine;
Next, she who ascertained the rights of men,
Not by the sword, but by the word of Penn,—
The friendly language hers of "thee" and
"thou";

Then, she whose mother was a thrifty vrow,—
Mother herself of princely children now;
And, sitting at her feet, the sisters twain,—
Two smaller links in the Atlantic chain,—
They, thru those long dark winters, drear and
dire,

Watched with our Fabius round the bivouac
fire;

Comes the free mountain maid, in white and
green;

One guards the Charter Oak with lofty mien;
And lo! in the plain beauty once she wore,
The Pilgrim mother from the Bay State shore;
And last, not least, is Little Rhody seen,
With face turned heavenward, steadfast and
serene,—

She on her anchor, Hope, leans, and will ever
lean.

—CHARLES T. BROOKS.

Health the Basis of Good Teaching

By F. H. SPINNEY, Montreal

I have taught school when my health was at a low ebb, and I have also taught when I felt filled with all the energy of a sound body; and I am convinced, beyond the shadow of a doubt, that the teaching I did in the former instance was worse than no teaching at all.

No teaching is of avail unless backed up by intense enthusiasm. The first essential of enthusiasm is a sound mind in a sound body. The weakling may have spasmodic fits of enthusiasm; but the kind of enthusiasm that counts is the kind that holds fast day after day, morning and afternoon, in sunshine and in cloudy weather.

Good health is the basis of good teaching, because it represents the normal condition of childhood. We cannot teach well until we "become as little children,"—full of the spirit of play, justice, and cheerfulness. When a teacher has forgotten his childhood, it is time that he looked for another job,—a job that does not involve materials that are making manhood and womanhood, noble characters, living souls.

Good health is the basis of good teaching because the good teacher must inspire his pupils with lofty ideals. Text-books do not inspire; nor does any feature of the whole system of education. What the boy "learns" at school is an insignificant matter, compared with the habits that he forms there, the tastes that he acquires, and the ambition that he develops. All these vital characteristics depend upon the teacher. The teacher with the headache, or dyspepsia, or other serious physical defect, will fall far short of fulfilling this high function.

Thus, if we would reach the heights of success in our profession, we must look to our health. We eat too much or not enough; we do not exercise enough; we fail to get enough fresh air; we are strangers to the sunshine; we use our energies in commonplace talk; we lack physical and mental poise. If we have these errors debited against us, we must correct them. First, we must get a correct mental attitude; then let us get out early in the morning and breathe deep breaths of pure air mixed with sunshine; let us get our windows wide open at night; let us substitute fruit in the place of some of the meat and potatoes that we now devour; let us rest at convenient times; and, above all, let us not talk so much when we have nothing to say: there is no greater source of leakage of human energy than useless talk.

Let us go to work in the morning with JOY in our hearts, saying to ourselves that we are members of the noblest profession under the sun. Let us make such a thoro preparation of lessons that we shall be eager to arrive at school in order to test the results of our new plans and methods. Let us keep the children so eagerly interested and actively employed that they will think all work is play and the school the happiest place in the world.

Trade Routes and their Political Significance

By JACQUES W. REDWAY, F.R.G.S.*

The history connected with the establishment of routes of commercial traffic is the history of the diffusion of knowledge; and the history of commerce is practically the history of Western civilization. The opening of a new trade route is always followed by great changes in the centralization of population. Not only is there a tremendous growth of the cities which form the terminals of the route, but new cities and centers of population spring into existence all along the line.

For example, in medieval times—about the twelfth century—a trade route was established in Europe, of which London and Venice were terminals. This route lay across the Alps from Venice, crossing the mountains thru Brenner Pass and thence along the valley of the Main and Rhine rivers. As a result Innsbruck, Augsburg, Würzburg, Frankfurt and Cologne grew from insignificant trading-posts to flourishing cities, while Venice and London became great centers of commerce and manufacture. Another traffic route, extending from Venice to Hamburg, threaded Semmerling Pass, and built up the cities of Vienna, Prague, Dresden, and Meissen. This route descended the Elbe River. Still another route lay across the Alps thru St. Bernard Pass, connecting Venice with Paris and the Seine River. Along this route Lausanne, Dijon, and Troyes grew to importance; then the traffic followed the valley of the Seine to Paris, and up the valley of the Oise to Ghent and Bruges. Another, a Muscovite route established about the same time, extended from Hamburg to Perm, beyond Lower Novgorod, its principal terminal in the East being Moscow.

It is worthy of notice, the last-named route excepted, that these routes have certain geographic features in common—namely, passes and river valleys. And the reason therefor is obvious: they are routes along which traffic may be most easily carried—that is, "lines of least resistance." The last named, the Muscovy route, is likewise a line of least resistance, but requires a different explanation, as will be seen.

In the Asian continent it is not always an easy matter to discover the origin of the trade routes now best known. In Europe, many of them are old Roman military roads; in Asia nearly all are old caravan routes; in Africa they are merely trails that have been used for centuries. That is merely the human side of their existence; what they were before the age of human efforts may not be known. But in the United States the evolution of traffic routes has been so rapid that, in many instances, the record of their history is complete.

The bison, or American buffalo, was the road-builder of his times. Great herds of bison, traveling from one feeding-ground to another, made the trails that since have become the chief traffic routes of the American continent. The bison was something of an engineer, as well, and his side-partner was the moose. Both, in a way, were migrating animals. Hereditary instinct, intelligence, education—whatever the name by which one may choose to call it—taught the animal to go by the easiest route in traveling between feeding-grounds, or to salt-licks. In mountainous regions the herds clambered over low passes and threaded river valleys. In the prairie regions the herds almost reversed this method; they avoided the river flood plains and sought the bluff lands instead.

A reason for this is not hard to find. The bison is a heavy animal and, unlike the caribou, or water-buffalo, has very small feet. Now those same feet were ideal factors in traversing the gravelly banks and beds of mountain streams; but they were a long way from ideal factors of locomotion in the muddy bottom lands of the prairie streams. And so we find that, in the physiography of the Brenner Pass-Rhennish route and the Muscovy route, history is merely repeating itself. Perhaps even these routes were first laid out and traversed by the aurochs, the bison of Europe. Who knows?

In the United States fragmentary bits of these old buffalo trails yet remain. They are deeply worn in the prairies, and the gaps which they made thru forested regions are still uncovered by timber growths. The routes which they made extended almost across the continent, and they are unquestionably the best that can be found. The routes followed across the Appalachian Mountains by the Pennsylvania, the Baltimore and Ohio, and the Chesapeake and Ohio railways follow old bison trails most of the way. At Tunnel No. 6, the Baltimore and Ohio pierces the mountain, drives under the trail, and emerges upon it at the opposite end of the tunnel. An English guest, noting the marvelous line of the Central Pacific (now a part of the Southern Pacific system), complimented Mr. Stanford, then the president of the railway, on the fine engineering ability displayed in the grade between Auburn and Blue Canyon. "Nothing easier," replied Mr. Stanford; "the engineers just followed the old stage road." He might have added that the stage road followed an Indian trail, and that the Indians had showed their good judgment by following the bison.

The trail from the Potomac River to Pittsburg, over which Washington carried his sup-

*All rights reserved by the author.

plies to Fort Necessity, was a bison trail. A little later on General Braddock reconstructed it, making it a wagon road, which to this day is known as Braddock's Road. Near Fort Duquesne it was joined by another old trail made into a wagon road by that hard-headed old Scotchman, John Forbes, soldier and physician. The latter trail crossed the mountains from Carlisle, and from the point where it joined Braddock's Road and enters Pittsburgh it is called Forbes Avenue to this day. No one would take the least jot or tittle from the honor of the canny old Scot, who loved fighting better than physic; but let us at least give due credit to the Indian and the bison, who had used that same trail for centuries before.

But the open ways—"gateways" and passes, we call them—were often more than mere traffic routes; they were strategic positions of the greatest importance. This may be seen in the case of the region comprised in central New York. Long before the advent of the white man errant tribes left the grounds in the West occupied by the great Cherokee family of Indians. Some found their way to Canada; some reached the vicinity of the Carolinas; a few remained in western New York; a considerable number made a stand in central New York. Their ground was one of the most important strategic positions in the continent. The tribes became a great confederacy—almost an empire. These Indians—Senecas, Oneidas, Cayugas, Mohawks, Onondagas, and afterwards the Tuscaroras—were merged into a great military organization. They were compelled to hold this position by main strength and strategy; for it was a converging point of the most important highways of the continent. Westward along the Great Lakes and the open valley leading thereto they could command the upper Mississippi valley. Eastward they commanded the Hudson and St. Lawrence valleys. On the north they commanded the routes to Canada. On the South and Southwest they held the approaches to the Ohio and Susquehanna River valley. To hold such a position they must become the foremost power of the continent—the other alternative was extermination.

Now the very same conditions which made the Iroquois (or Cherokee*) Indians dominant among the tribes of the Red Race have also made New York the Empire State. It is today, as it was then, the converging point of the most important highways of the continent. Then they were military; now they are commercial.

The widespread effects arising from the development of a trade route are finely illustrated in the study of the history of Europe following the opening of the all-water route between Eu-

rope and India around the Cape of Good Hope. Prior to the utilization of this route, the commerce between Europe and India followed chiefly three routes: (1) From a Mediterranean port along the Black Sea to Trebizond, thence along the Tigris River and Persian Gulf to India; (2) across the Suez Peninsula to the Red Sea, and thence to India; (3) to the ports of Beirut, Tyre or Sidon, thence thru Damascus, Tadmor, and Babylon to the head of the Persian Gulf. The first two named were the most important in medieval times. The cities of Venice and Genoa were the chief European terminals of these routes; thence the traffic followed one or another of the routes mentioned in the second paragraph of this chapter.

From a number of scarcely habitable mud-flats to which the people of Aquileia and Padua fled to escape the sword of invading Huns, Venice became the foremost commercial and manufacturing city of Europe. Her territory was extended to the mainland and included considerable parts of Istria, Dalmatia, Lombardy, the Grecian peninsula, and the islands of the Aegean Sea. Her fleet comprised three thousand merchant vessels and forty warships, all of which followed scheduled routes.

The rise of Genoa was nearly as remarkable. Her receiving trade penetrated nearly every important Mediterranean port of Asia and Africa, and her depot at Kaffa, on the Crimean peninsula, was one of the most important in all Europe. On these two cities depended largely the rise and growth of Milan; not for commerce, however, but for agriculture. Milan and its environment constituted the "truck farm" for Venice and Genoa. The city was also noted for manufactures—chiefly of armor, and this was a relic of the wars of the Crusades.

The intrusions of the Turks, the capture of Constantinople, and the rapacity of Arab mid-dlemen at Alexandria marked the beginning of the end of this vast commerce, and immediately there began the search for routes to India that the Turks could not blockade. The voyages of Columbus and Vasco da Gama were tangible results of this search. The former gave to the world the knowledge of a new continent; the latter was to bring upon western Europe the greatest changes ever wrought—greater even than the Latinization of Germany, Gaul, and Britain.

The utilization of the Cape of Good Hope route to India left Venice and Genoa far out of the line of travel, and also with but little commerce at their command. Moreover, as Mediterranean sailors were not trained to deep-sea navigation, the carriage of the traffic over the new route was to devolve upon Norse sailors. Still more, Lisbon and the ports of the North and the Baltic Sea were to become the chief terminals of the Asian trade. The establishment of the new trade route, therefore, practically changed the trend of commerce and

*The two names are probably variants of the same word, but neither one is the name by which they called themselves.

the commercial centers in nearly all of Europe.

But the newly created commercial centers of western Europe found there an institution with which it was soon to engage in a warfare of extermination—namely, the feudal system.

The feudal lord was paramount in western Europe as a military power. With the advent of commerce he found himself confronted with a money power. It was a long-drawn but a one-sided contest. Brute force has but little chance in a contention with brains backed by money. The feudal lord was always in need of ready money and there was but one source of replenishment—the moneyed men who were carrying the purse-strings of commerce. For the loans—and they were rarely repaid—the consideration usually consisted of rights, franchises, and charters. It was mainly by this and similar means that Hamburg, Bremen, and Lubeck became “free” cities; and they purchased their freedom in order that their commerce might not be disturbed. It was a long-drawn fight, in which feudalism was vanquished, but when the fight was over, western Europe was existing on a materially higher plane of civilization. The feudal lord no longer held his subjects in thrall; serfdom had given place to freedom; ignorance to knowledge; democracy to monarchy; and bigotry to intelligence. And all these were the direct results of turning the great streams of commerce thru new channels—that is, along new trade routes.

The foregoing is an illustration, not only of the widespread and far-reaching effects of the establishment of great or continental trade routes; it also points out the fact that commerce is to-day the world's chief industry. The environment from which civilized man draws the commodities of life is the whole world; he gives to the whole world in return. Restrict his environment to the few square miles that immediately surround him and he is put back to the state of savagery from which it required forty centuries to emerge. Many factors are involved in the conditions we call modern civilization, but commerce is the agent whereby it is diffused. Commerce is the activity, the positive motion of human industries, and the trade route is the channel in which it moves. The surplus products of the farm, or of the factory, have practically no value unless they can be marketed.

Most of the great movements known in history as “revolutions” are industrial, and therefore commercial, in their character. The war of the colonies against England, in 1776, gave them commercial existence, an existence they did not before possess. It was a protest against the enforcement of the navigation laws. The war of 1812 completed the commercial independence of the United States; and the real purpose of the war with Mexico, a most disreputable affair on the part of the United States, was designed to enlarge and expand the

commerce of cotton. Most of the wars in which Great Britain has been engaged were for the defense of the markets for her commerce, or for the possession of new ones. Her national debt represents the price she paid for her markets.

The war waged upon China by Japan was for the possession of a market—Korea; and the war between Japan and Russia was to prevent the latter from blocking Japan's trade route into Manchuria. The unification of the states of the Italian peninsula, for which Cavour labored so strenuously, was the expansion of a most wise commercial policy. So long as Italy was composed of small and independent States a general commerce was well-nigh out of the question, because of the obstacles and delays of traffic at the several State boundaries. The railways, for the greater part, extended across instead of along the peninsula. With unification all this was quickly changed, and trunk lines of railway were established. As a matter of fact these were built on the foundations of the Roman roads, so that the trade routes of the past became the trade routes of the present and the future.

The unification of Germany, following the Franco-Prussian war, was followed by the same results. The obstacles to traffic made any general commerce across Germany, east and west, almost prohibitive because of delays and expense. With Germany unified there came not only the organization of trunk lines of railway but a resulting development of the iron and steel industry which places the empire second only to the United States in the production of structural steel. But the new German empire is founded, not on the Divine Right of its rulers, but upon commerce moving along lines of least resistance—that is, along wisely chosen trade routes.

A Mosquito-Proof Steamer

The first ocean-going mosquito-proof vessel built for the African trade, the *Jonathan Holt*, arrived at Liverpool on July 6th, and will shortly commence its regular service in the Liverpool-West African trade as a vessel of John Holt & Co., Liverpool.

Fittings are provided against the intrusion of mosquitoes in the quarters of both passengers and crew. All doorways, side-port openings, windows, skylights, ventilators, and passages have been provided with mosquito-proof, close-mesh gauze coverings, which, while allowing the necessary ventilation, prevent the admission of the disease-bearing mosquito. Great care has been given to the convenient placing of these fittings to make them readily adjustable. The vessel is 262 feet long, has 38 feet beam, and is 18 feet 3 inches in depth.

The plan of arrangement adopted was recommended by Prof. Major Ronald Ross, C.B., a recognized malarial expert, whose malarial recommendations are very generally known, thruout the tropics.

Industrial Nature Study

By FRANK OWEN PAYNE

Insects and Insect Products

The pupil should study one or two insects very carefully, so as to get a pretty good idea of what is meant by the term *insect*.

This word is often used loosely to include all creatures having jointed bodies. Thus worms, crustaceans and myriapods are sometimes loosely so-called. The term *insect* is properly applied only to those jointed creatures whose bodies are more or less *three-parted*, and whose legs are only *six in number*.

Study of a Typical Insect

I. THE GRASSHOPPER

This is one of the best insects for study. It is so abundant, so readily captured, and the various structures are so easy to discover, that it is recommended as admirably suited for the initial lesson.

Method.—Procure several living grasshoppers and place them in a large glass jar or cage made of wire gauze, in a sunny window where there is plenty of light and air. For food, give them cabbage or lettuce leaves, and renew the supply of fresh leaves as often as the old ones become withered. In this way the grasshoppers may be kept for several days and their habits of motion, feeding, etc., can be studied at length.

Observations.—(a) Locomotion.—The grasshopper can move about in three ways. First, *walking*, in which all legs are employed; second, *hopping*, in which the large hind legs only are used; and, third, *flying*, which is performed by the wings. The caged insects will never fly, and that act is best observed in the field when they are being captured. The wings do not seem to adapt the grasshopper for long flight, but rather to keep him in the air after he has been raised by action of the hindmost legs. (b) *Feeding* is best observed in cages. The mouth will be seen to open *sidewise* and not up and down, as with the higher animals. Many curious, toothed organs are found about the mouth by means of which the food is bitten off.

It is astonishing how rapidly grasshoppers devour vegetation. One common grasshopper under observation ate three large lettuce leaves a day for five days, and died of starvation in the intermission over Saturday and Sunday.

Anatomy.—Observe the animal very carefully and answer the following questions: 1. Into how many regions is the body divided? (Three—head, thorax, abdomen.)

2. To which part are legs attached? (Thorax.)

3. How many legs? (Six.)

4. Are they alike in size? (No.)

5. Which are largest? (Hind pair.)

6. Why? (To fit for leaping.)

7. What other appendages are attached to the thorax? (Wings.)

8. How many wings? (Two pairs.)

9. Are the wings alike? (No.)

10. Describe the two kinds of wings.

11. Which sets of wings aid in flight?

12. Of what use are the front wings? (Protection.)

13. Look for a scythe-shaped organ at the end of the abdomen. This is found only on females and is used for depositing eggs. (Ovipositor.)

14. Examine the sides of the abdomen and look for breathing pores (spinacles) arranged along the sides of the abdomen like button-holes. How many can you count?

15. The head. By what means can a grasshopper feel? (Antennæ.)

16. How many antennæ (feelers) has the grasshopper? (Two.)

17. Examine the large compound eyes and look for three small single eyes (ocelli) on top of head.

18. Has the grasshopper any ears? Nose?

19. Examine the mouth and see how many parts you can discover.

20. With a magnifying glass examine feet, eyes, antennæ, mouth parts and spiracles.

21. Draw grasshopper—top view, side view, under side, and make sketches of a leg, wing, mouth parts, etc., if the pupils are old enough to undertake these.

22. Can a grasshopper make a noise?

23. How does it chirp?

24. Place a live grasshopper on the floor and let it jump. Then measure the length of its leap. The grasshopper can leap how many times the length of its own body? How many times the length of *your own* body can *you* leap?

Practical Applications.—The grasshopper is a bad insect. The amount of valuable vegetation devoured by the grasshopper in some places and in some seasons is prodigious. Our Western States have been frequently ravaged by them, and millions of dollars' loss have been thus entailed. The Bible mentions the coming of the locust as a plague in general (*Joel II. 3-6*), and one of the plagues of Egypt illustrates this in particular.

II. BEETLES

These may be recognized by their smooth, shell-like outer wings (elytra), which meet in a straight line running down the back.

The under wings, very delicate and often beautifully colored, are folded away underneath.

The feet, mouth parts and antennæ are curious and very interesting.

The June bug, lady beetle, Colorado potato

beetle, elm beetle and rose bug are among the commonest forms, but many varieties may be found by turning over stones or boards which have remained on the ground for some time, or by removing the bark from decayed logs. The young of beetles, called "grubs," may be found by digging in soft soil and in rotten wood.

Practical Applications.—Beetles may be classed as useful and harmful. The harmful species greatly outnumber the useful, and so they will be first considered. The principal harmful beetles are:

(a) *Leaf-eating* kinds like the rose bug, elm beetle, etc., which eat the vegetation of plants and so injure them commercially or hinder them in their work of making plant foods.

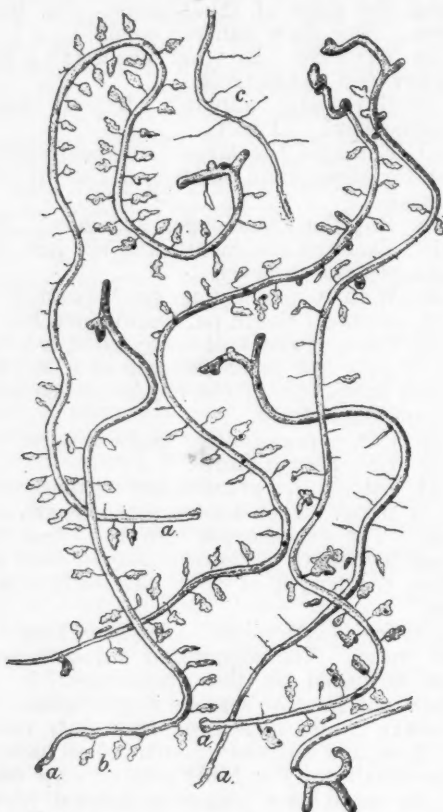
(b) *Wood-boring* beetles, which render sound lumber almost worthless because of their burrows. Locust wood is a very hard, durable

wood that part worthless. Plum weevils have caused the loss of thousands of bushels of that fruit, and the white pine weevil has been responsible for millions of dollars' damage to that valuable lumber.



(d) The "wireworm," so called, is the larva of the snap beetle. It does much harm to corn. The principal useful beetles are:

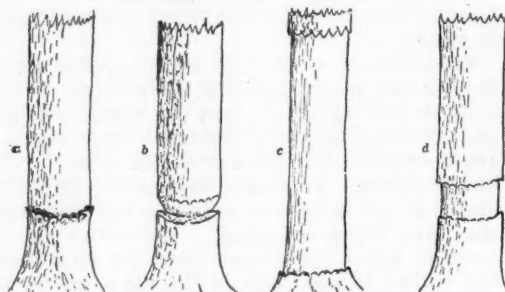
(a) The tiger beetles, rove beetles and lady beetles, which destroy vast numbers of other insects. The children of the writer found two beautiful green beetles which were placed on a bush inhabited by caterpillars. It was interesting to see how quickly and how effectively they were seized and devoured. Their empty skins alone remained to tell where the wholesale slaughter had occurred. Both the curious larva and the gay adult forms of lady beetles feed on plant lice. Wherever these beetles are seen plant lice will invariably be found.



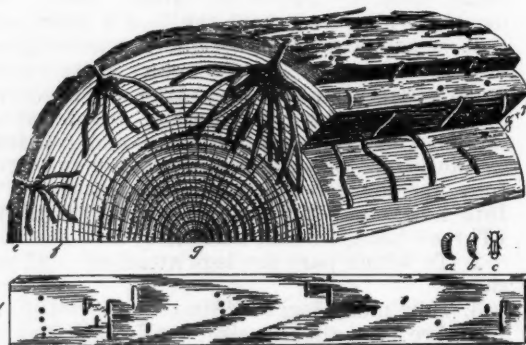
Tunnels gnawed out by wood-boring beetles.

and exceedingly beautiful lumber. It would be fine for cabinet work and in many other ways were it not for the locust borer which infests this tree to such an extent that clear locust lumber is almost unknown in the market.

(c) Weevils, which do incalculable damage to fruits, grains, lumber and forage plants. The adult lays the eggs upon the part of the plant affected and the young grub bores in and ren-



Girdling of stem.



Work of wood-borers in timber.



The Weevil Which Destroys the Chestnuts
The illustration to the left shows the ravages of wood-boring beetles

(b) Scavenger beetles are also among the useful insects. Sexton beetles undermine the bodies of dead animals so that they eventually are buried. Carrion beetles feed on decaying substances. Dung beetles are found about barnyards, where they assist in the removal of offal. The famous sacred scarab of Egypt was a dung beetle.

(c) A few beetles are of special use. Such are the glowworm, lightning bug, or firefly, which is used for ornamental headdresses and for illuminating purposes in tropical countries. The blister beetle is sold in drugstores as cantharides, used as a counter-irritant. Certain South American beetles of iridescent green color are used in jewelry and hence they are known as jewel beetles.

III. MOTHS AND BUTTERFLIES

This group of insects is well known and needs no special description here. Moths and butterflies are different from all other insects in having their wings covered with scales which are very beautiful in shape and color.

The principal differences between moths and butterflies are as follows:

Butterflies are *diurnal*, or day fliers. Moths are *nocturnal*, or night fliers.

Butterflies have *knobbed* or slightly hooked antennæ, while moths have antennæ of various forms, sometimes much *branched* like a plume.

The bodies of butterflies are slender, but moths have large, clumsy bodies.

Butterflies spring from *naked crysalids*, while moths spin a more or less *silky cocoon*.

When at rest butterflies' wings are folded and erect, but moths invariably rest with wings spread flat out.

Metamorphosis.—As among the higher animals the frog furnishes a good chance to study development, so these scaly-winged insects furnish an admirable example of metamorphosis. The life cycle of an insect is comprised in the following stages: (1) Egg, (2) larva, (3) pupa, (4) adult or imago.

All of these stages can be seen in any cabbage field. The eggs will be found in small green clusters on the cabbage leaves. The larvæ, called "cabbage worms," may be found greedily devouring the leaves. The pupæ may also be found hidden away where they will escape the eye of birds. The adults will be seen flitting about as the familiar yellow butterflies so common in every cabbage patch.

Cocoons of various moths may be found fastened to trees, fences and shrubbery. If brought into the house and kept in a cool, damp place, they will soon be seen creeping forth to spread their wings and fly away.

PRACTICAL APPLICATIONS

Among the scaly-winged insects are some useful creatures, but by far the most of them are properly ranked as pests.

(a) In the adult state they do no harm, but in their larvæ state they are guilty of leaf-eating, wood-boring, cloth-eating, and spoiling meal (meal worms), fruit (canker worm), etc.

Much damage is caused to furs, feathers, carpets and other woolen fabrics by ravages of moths. Much soft maple is spoiled by the maple-tree borer. The gypsy moth, the codling moth, the tussock moth, and the tent caterpillar are notorious insects of this class.

Farmers, fruit-growers and foresters have devised many ways for killing such insect pests. "Paris Green," lime and "Bordeaux mixture" are among the best-known insecticides.

(b) These creatures cannot be regarded as wholly bad, however. Their great beauty makes us love them even when their larval depredations are well known. They are also very important in pollinating flowers. Some plants could not produce seeds were it not for certain insects which are specially suited to pollinate them. Night-blooming plants are visited by moths, while day bloomers are the resort of butterflies.

Commercially the "*silkworm*," so called, is one of the most important creatures. The raw silk is unwound from the cocoons and woven into various fabrics. Silk, satin, velvet, plush, velour, crêpe de Chine, and various expensive cloths are made of it. The raw silk production of the world was 38,360,000 pounds in 1899, of which China and Japan produced 25,500,000 pounds. In 1904 the United States imported 16,692,950 pounds of raw silk, most of which was made into silk fabrics in New Jersey and New York.

IV. BEES AND THEIR ALLIES

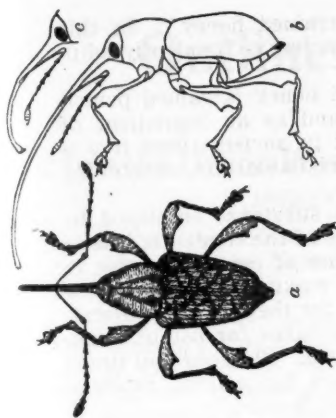
Ants, bees, wasps, hornets and ichneumon flies belong to this group. They may be easily recognized by their membranous wings, their mouths, which are fitted for biting and suction; their stings, which are situated at the end of the abdomen, and by the fact that they nearly all live in colonies which are ruled by queens.

These insects are most intelligent and a careful study of their habits is worth a great deal of time. Many books have been written on the bee, and any library will furnish plenty of material for the use of teachers. As special objects for observation, the following are suggested:

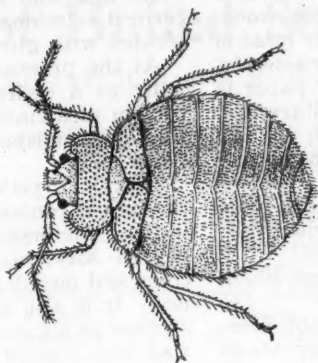
1. An ant-hill and its tenants.
 - (a) Watch the colony and observe the goings and comings of its inhabitants.
 - (b) Place a small pile of granulated sugar about ten feet from a large ant-hill and watch it. See how soon its presence is discovered and how quickly it is removed.
 - (c) How many kinds of ants can you find about a hill?
 - (d) Dig open an ant-hill and note its form, structure, plan. Are there different departments? Note the behavior of the various ants when their nest is disturbed.

One of the Cornell Nature-Study Bulletins describes a very helpful device for studying ants.

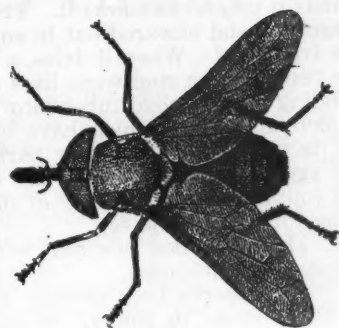
2. The paper wasp and mud wasp are very



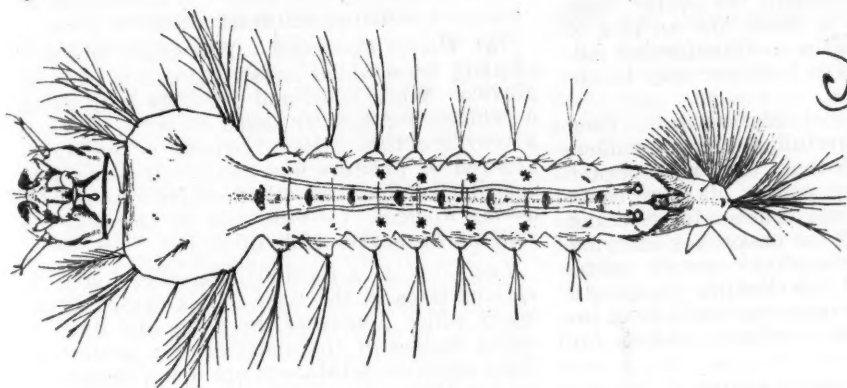
weevil



bed bug.

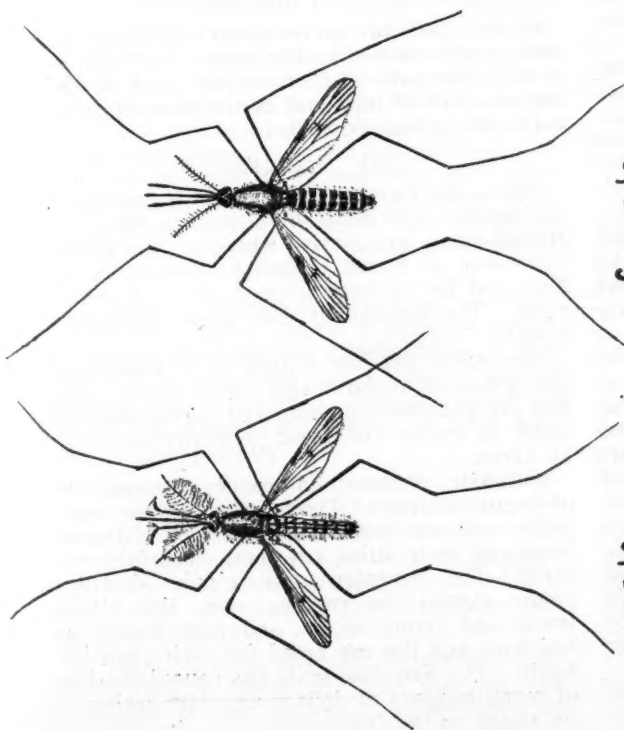


black fly.



(c)

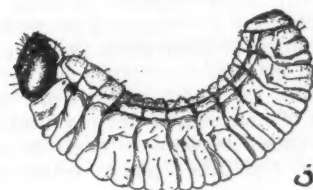
- a'- natural size
- a- en larged size
- b- pupa, or dormant stage
- c- larva



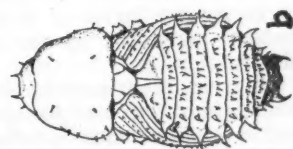
female

Mosquito

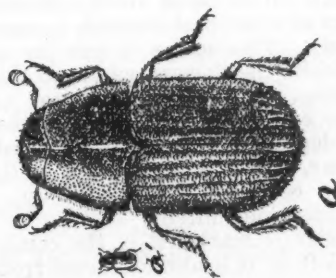
male



c.



b



a

Wood-boring Beetle.

interesting subjects for study. The former procures material from weather-beaten wood, grinds it up and swallows it. Then the mass is disgorged and smeared out in small masses by the front feet. When it dries, a gray paper is the result. The mud wasp lives a solitary life, building its tiny mud tubes into which are put numerous spiders which have been paralyzed by its sting. Among these paralyzed spiders the eggs of the mud wasp are laid and thus the young wasps find plenty of food when they come forth from the egg.

3. The honey bee, however, is the one which merits most attention.

- (a) Observe bees as they go about from flower to flower. In this way something may be seen of the source whence they obtain the nectar from which honey is made, and an idea of their importance in transferring pollen from flower to flower may be obtained.
- (b) Catch a bee and chloroform it. Then examine it carefully with a magnifier. Its feet, with their wonderful organs for gathering pollen; its legs, with their combs and brushes for cleaning the body, and the basket for carrying pollen; its remarkable mouth parts, weapons and interlocking wings—all contribute to make the bee a most interesting and profitable object for study.

PRACTICAL APPLICATIONS

With the exception of ants, this group of insects may be regarded as useful to man, and even ants, in their work as scavengers, are beneficial insects.

Ants, however, often work in the foundations of houses and destroy timbers. They also sometimes become a pest in pantries, bake-shops, and other places where sugar is abundant.

There are also some wood-boring bees which are injurious to lumber.

Wasps and hornets destroy vast numbers of flies and other insects. Ichneumon flies lay their eggs on the larvæ of other insects, and they become parasites on the latter, causing their destruction.

But the great importance of this group lies in the production of *wax* and *honey*.

Honey is a sweet liquid produced by several kinds of bees. The honey is not found in the flowers. The liquid in the flowers is nectar, a sort of sweet water which is secreted in most flowers. This serves to lure the insects. The bee visits the flowers, sucks up the nectar into its crop, where it acquires the characteristic flavor of honey. The honey is then disgorged and deposited in peculiar six-sided cells made of wax, which is a secretion of the bee. The waxen cells are then sealed up. The honey will keep indefinitely.

Honey is marketed in the comb just as the bees left it. It is also extracted from the honey-

comb and sold as "strained honey." In this form it is seldom pure, but is frequently adulterated with glucose.

At the present day, honey is valued principally as a delicacy, and as an ingredient of certain medicines, but in ancient times it was the only substance available for sweetening foods.

Wax is a yellowish substance employed by the bees in construction of the comb. It is used by man for manufacture of candles for use in church services, for making impressions of coins and medals, and for the modeling of statues. It is also sold in cakes for use of seamstresses in waxing thread. Bleached and tinted wax was formerly used for making artificial flowers and coating doll faces.

V. OTHER ECONOMIC INSECTS

(a) *Useful Cochineal*.—This insect is a sort of plant louse which infests the cactus plant in Mexico. When killed and dried, its body yields a valuable red powder called *carmine*, which is a very beautiful color. Carmine is the standard red of printers and dyers. It is used in coloring candies and other confections and in dyeing woollens. *Carmine* and *crimson lake* are well-known paints made of it.

Lac.—Lac is a resinous substance found on various trees in the East. It is caused by an insect which punctures the twigs and then secretes masses of the material as a protection. Many common substances are made therefrom. Among them are the following: Shellac, sealing-wax, stick lac, etc., used in making varnish, dyes, water-colors and drawing-inks.

Galls.—Galls are excrescences formed on various plants, caused by the sting of certain insects. Oak galls are extensively used in the manufacture of inks and in the production of gallic and pyrogallie acids.

(B). HARMFUL

Flies.—All members of this family are harmful insects. The house fly is bred in filth, and disease germs are carried wherever this household pest is found. Cheese-skippers, horse flies, and the cabbage maggot are well-known pests. The Hessian fly does great damage to wheat.

Mosquitoes are now known to be a cause of the spread of malaria and yellow fever. Bat flies are parasites on sheep and horses, and the tsetse fly causes the dread "sleeping sickness" of Africa.

Katydid, crickets and roaches are relatives of the grasshopper. The first two devour vegetation and the last is a house pest. Among bugs and their allies are many harmful creatures. The seventeen-year cicada destroys young stems; the various plant lice attack leaves and young shoots, and vermin such as bed bugs and lice are noted for their parasitic habit. The San Jose scale has caused the loss of many millions of dollars annually, owing to its attack on the fruit crop.

Outlines of United States History

By JAMES H. HARRIS, Minneapolis

How the Union Was Reconstructed (1865-1877)

The Problem.—How to restore to their former places in the Union the States recently engaged in war with the United States.

1. *The First Step in Reconstruction.*—President Lincoln's Proclamation of Amnesty, December, 1863. What were the essential provisions of this proclamation? What Southern States accepted it? Lincoln's attitude and policy toward the Southern States were revealed by this proclamation. "We all agree," he said, "that the seceded States, so called, are out of their proper practical relation with the Union, and that the sole object of the Government, civil and military, in regard to these States is to again get them into that proper practical relation. I believe that it is not only possible, but in fact easier, to do this without deciding or even considering whether these States have been out of the Union, than with it." In the first place, then, Lincoln's object was a purely practical one, viz., to get the seceded States as quickly and with as little friction as possible back into their "proper practical relation" with the Union. In the second place he believed that it was the duty of the Executive to reconstruct the State Governments. This last-named view did not meet with the approval of many of the leaders in Congress, who believed that the problem of restoring the Southern States to their former relation with the Union belonged to Congress, and did not rest solely with the President. While this difference of opinion did not assume serious proportions during Lincoln's administration, it was the rock upon which President Johnson and Congress split, and it is well to bear in mind that the beginnings of the conflict were made in President Lincoln's administration.

2. Congress refuses to receive the members of Congress sent by the three Southern States which accepted Lincoln's Proclamation of Amnesty, and in July, 1864, sent a different plan of reconstruction, to which, however, he did not agree. The subject did not come up again until after Lincoln's death.

3. Andrew Johnson becomes President, April, 1865. Johnson's character, temperament, education and political record.

4. Johnson adopts the reconstruction policy of Lincoln, and issues a Proclamation of Amnesty which followed closely President Lincoln's Proclamation.

5. As Congress was not in session from April, 1865, to December, 1865, Johnson took advantage of the recess to rehabilitate the

Southern States. By the late autumn of this year every State of the former Confederacy had organized a new government, had repealed or annulled the ordinances of secession, had assented to the abolition of slavery, and had chosen representatives and senators ready to take their seats in Congress as soon as they were admitted.

Eleven of the Southern States had ratified the Thirteenth Amendment and their votes were counted in its adoption.

What was the Thirteenth Amendment, and when was it proclaimed to be in force?

6. *The Condition of the Negroes in the South.* Four million of them were suddenly made free. From a condition of abject dependence, they were, in a moment almost, given complete independence. They were without education and had had no experience in caring for themselves. Congress, realizing that the slave would be incompetent, had established a Freedmen's Bureau, in March, 1865, for the express purpose of assisting the negroes in getting a start in their new life. While the purpose of the Bureau was excellent, its effect upon the negro was not of the best. If the Government would support him he saw no need of working to support himself, and as a result large numbers became idlers, vagrants, paupers and even criminals.

The South, to protect itself, enacted vagrancy laws. What was the general nature of these laws? What interpretation was placed upon them by the North?

The question, what to do with the negroes, was the vital and crucial one in the days of Reconstruction.

7. When Congress assembled in December, 1865, after the long recess, it refused to recognize the work of reconstruction done by President Johnson, and declined to acknowledge the governments which the white people of the seceded States had set up. The names of all the seceded States were omitted in the roll-call. Congress was determined to handle the problem of reconstruction in its own way, and accordingly appointed a Committee of Fifteen on Reconstruction to investigate and report on the whole subject. The issue between the President and Congress was thus clearly drawn.

8. In February, 1866, Congress passed an Act continuing the Freedmen's Bureau indefinitely and greatly enlarging its powers. (Originally the life of the Bureau had been limited to one year.) The President vetoed this Act and Congress was unable to pass it over his veto.

9. In March, Congress passed a "Civil Rights" bill, declaring "all persons born in the United States, and not subject to any foreign

power," citizens of the United States. This bill made the negro a citizen. The President vetoed the bill, but Congress passed it over his veto.

10. In June, 1866, Congress adopted the Fourteenth Amendment, which embodied the principles of the Civil Rights bill in constitutional form and made them a part of the supreme law of the land. (Read this Amendment, as it stands in the Constitution, and note its essential features.)

This amendment went to the States for adoption, with the understanding that no Southern State which failed to adopt it should be readmitted to representation. Tennessee was the only Southern State to adopt it, and in July was formally reinstated in the Union. The other Southern States rejected it. President Johnson and Congress were now more bitterly hostile to each other than ever, and each now openly and publicly criticized and denounced the other.

11. *The Reconstruction Act of 1867.*—The congressional elections of 1866 made Congress more overwhelmingly Republican than ever, and it proceeded with more vigor and determination than before to carry out its policy of reconstruction. In March, 1867, Congress passed an Act which provided that the States of the Confederacy, with the exception of Tennessee, should be divided into five military districts, under the command of five general officers of the army. These officers had charge of the work of reconstructing the governments of the States in their respective districts.

For the purpose of organizing these State governments, the law passed by Congress allowed only those to vote who could take an oath that they had not engaged in insurrection or rebellion against the United States. This had the effect of eliminating practically the entire white vote and confining it almost entirely to the negro vote. The law further provided that when a State Constitution satisfactory to Congress had been adopted, and when the Fourteenth Amendment had been ratified, military rule would be withdrawn and the State readmitted to the Union. Under this law, constitutions were adopted in North and South Carolina, Florida, Alabama, Louisiana and Arkansas, and these States were readmitted to the Union in 1868. Virginia, Mississippi and Texas refused to adopt new constitutions, while Georgia adopted one that was not satisfactory to Congress. They were accordingly kept out of the Union for some time longer.

12. *Tenure-of-Office Act and the Impeachment of President Johnson.*—What was the nature of this Act? What was its purpose? The test of the Act came when President Johnson requested the resignation of Edwin B. Stanton, Secretary of War. Mr. Stanton refused to resign, the President insisted, and finally Stanton appealed to the House of Representatives for protection. On the 24th of February, 1868, the House voted to impeach the President for

"High crimes and misdemeanors." The impeachment proceedings continued until the 16th of May, when the vote was taken. As there were not enough votes to impeach, President Johnson was acquitted and Stanton thereupon resigned. What proportion of the votes of the Senate is required to impeach a President?

13. *Election of General Grant to the Presidency. The Carpet-baggers.* Who were the "Carpet-baggers," and why were they so-called? What was their motive in going into the South-land? What was the effect of their presence?

14. *Negro Rule in the South and Its Effect upon the Southern States.* Its results may be summarized as follows:

(a) The negro proved himself as yet unfit to rule, or even to exercise intelligently the duties of citizenship.

(b) Millions of dollars were wasted or stolen, and the Southern States became burdened with overwhelming debts. For instance, the debt of South Carolina increased from \$5,000,000 in 1868 to \$30,000,000 in 1872; of Louisiana from \$6,500,000 in 1868 to \$50,000,000 in 1872.

(c) Race hatred was greatly intensified in the South.

15. *Ku-Klux Klan.*—What was the purpose for which the Ku-Klux Klan was organized? How did it carry out its plans? How did Congress retaliate on the purposes and motives of this society?

16. *The Fifteenth Amendment (1869) and the Force Bills (1870-'71).*—Read carefully the Fifteenth Amendment? Why did it seem necessary to adopt it? Did it add anything to what was already contained in effect in the Fourteenth Amendment? The four States of the Confederacy which had not yet been restored to their place in the Union—Virginia, Mississippi, Texas and Georgia—were compelled to vote for this amendment before being fully restored to the Union, but they finally acquiesced and were readmitted in 1870.

The Force Bills.—The first, passed in 1870, and the second, in 1871, were designed to protect the negro in his right to vote, and provided fines and imprisonment for anyone who tried to prevent him from exercising his rights. President Grant had to send troops to some portions of the South to see that these Acts were enforced.

But a reaction against these forceful and extreme measures was setting in at the North, and in 1872 Congress passed

17. *The Amnesty Act,* whereby a larger number of ex-Confederates were given the right to vote and hold office. Gradually conditions began to right themselves in the South, and in 1877, under President Hayes, the last obstacle to a complete and satisfactory Reconstruction was removed when the President withdrew from the South all the troops that had been sent there to preserve order and regulate elections.

Government of the United States

By ISAAC PRICE

Powers of Congress

THE COURTS

Congress also has the right to organize courts inferior to the Supreme Court of the United States. The Constitution provides definitely for the organization and establishment of only one Federal court, leaving the details of the organization and the organization of such other courts as may be found necessary to Congress, according to the country's needs.

The powers that have been conferred upon the various courts that have been established will be treated of in another article.

THE SEAT OF GOVERNMENT

The jealousies of the South and the North made the decision of the seat of the new Government very difficult, until Maryland granted to the new Government a tract of land on the northern bank of the Potomac River, known as the District of Columbia.

Until the building up of the city of Washington, the capital of the United States, the capital of the country was in different cities at different times. Philadelphia, Princeton and New York each had the good fortune of containing the official residence of the National Government until the present capital was ready.

The District of Columbia contains the capital city with the White House, the official residence of the President and the central offices of the Government. The National Government has also, either thru purchase or gift, received various tracts of land thruout the country for the building of navyyards, post-offices, Federal courts, over all of which Congress possesses exclusive jurisdiction.

COMMERCE

As a further corollary of the powers of Congress to regulate commerce with foreign nations, the Constitution, in Clause 10, gives the power "to define and punish piracies and felonies on the high seas, and offenses against the laws of nations." The specific reason for this grant of authority was that no proper authority existed that had made commerce safe and secure. The seas were often infested with pirates, thereby making the crossing of the ocean oftentimes extremely hazardous. All the civilized nations to-day are united upon what piracy is and its punishment, which may be defined as "robbery or forcible depredation on the high seas without lawful authority."

At various times conventions of delegates representing the civilized powers have met and agreed upon certain definite laws regarding the commerce, the oceans, etc., which have been recognized and adopted by these civilized na-

tions and control their intercourse with one another in these matters. These are known as the "laws of nations," or international law. The high sea is, in international law, all that portion of the seas and oceans not enclosed within a country or beyond the three-mile limit. Within the three miles the waters are regarded as the territory of the adjacent country, and all vessels and persons are subject to the laws of that nation. A felony is a crime whose punishment is death or imprisonment for a long term. Congress has the power to declare what crimes constitute a felony.

It was very early recognized that the individual States were incapable of dealing with these matters satisfactorily, and the result was that the power was made exclusive to the National Federal Government. Further, there is no recognition of any State by any foreign Government; the only authority recognized abroad is the Federal one, and therefore the necessity for providing a responsible authority to deal with these matters. Crimes brought within the jurisdiction of this clause are tried in the Federal courts.

IMPLIED POWERS

The consideration of the foregoing powers of the National Government has undoubtedly impressed one with the vastness of the powers of the Federal Government, and their importance. But in order to make sure of the ability of Congress to carry out these enumerated powers the last clause was added:

To make all laws which shall be necessary and proper for carrying into execution the foregoing powers, and all others vested by this Constitution in the government of the United States, or in any department or officer thereof.

It states only the general power of the Congress to carry out its laws. The powers that have, however, been gathered from this clause have been the bone of contention between the political parties in this country ever since its foundation. It is as a result of this clause that some of our most important national acts were rendered legal. The purchase of the Louisiana Territory, the establishment of the United States banks, the laws regarding the incorporation of railroads, the legal tender acts, and numerous others find their reason for existence in the clause.

Chief Justice Marshall says of this clause: "In construing this clause, it would be incorrect, and would doubtless produce endless difficulties if the opinion should be maintained that no law was authorized which was not indispensably necessary to give effect to a specific power. Where various systems might be adopted for

that purpose, it might be said with respect to each that it was not necessary, because the end was obtained by other means. Congress must possess the choice of these means, and must be empowered to use any means which are in fact conducive to the exercise of a power granted by the Constitution. The Government is to pay the debts of the Union, and must be authorized to use the means which appear to itself the most eligible to effect that object." This clause is frequently known as the clause of "implied powers" and "the sleeping giant" clause.

LEGISLATIVE PROHIBITIONS

We have seen from our study of American history that it was only as a result of necessity that the thirteen independent States agreed to adopt a new Constitution, and that the entire course of its adoption was marked by bitter debate, in which the ablest and most patriotic of our citizens took part, and in which Franklin rendered valuable and important service in partly allaying the ill-feeling which even this work of necessity for the preservation of the independence of the States aroused. The jealousies of the individual States marked the entire course of the making of the Constitution, in which the States surrendered valuable and essential rights to the central Government. As an offset and an assurance that the central Government would not and should not become too tyrannical and grasping in the powers delegated by these sovereign States, the framers of the Constitution included the provisions of Section IX of Article I immediately after the grant of powers to Congress. We shall here enumerate the individual restrictions upon the powers of Congress.

Reference to a previous article brought to our attention the dispute between the Northern and Southern States as to the slaves. A compromise was effected between the delegates which provided that

The migration or importation of such persons as any of the States now existing shall think proper to admit, shall not be prohibited by the Congress prior to the year one thousand eight hundred and eight, but a tax or duty may be imposed on such importation, not exceeding ten dollars for each person. (Art. I, Sec. 9, Cl. 1.)

This provision played a very prominent part in the national affairs, and its importance disappeared only with the extinction of slavery following the Civil War.

Habeas Corpus.—"The privileges of the writ of habeas corpus shall not be suspended, unless when in case of rebellion or invasion the public safety may require it." (Art. I, Sec. 9, Cl. 2.) This writ is one of the most valuable and highly prized rights gained by the English in the almost continual wars between the three classes of society. Tho recognized by the common law, it was not recognized legally until the

Act of 1679 was enacted. Under this writ, a person who has been deprived of liberty without due process of law, that is, in accordance with legal requirement and the proper procedure of the law, is discharged from his illegal imprisonment. A person suing out this writ is brought before the court at a very early date, and the case is thoroly inquired into. "Suspension of the writ of habeas corpus is a suspension of Magna Charta, and nothing but a great national emergency can justify or excuse it." (Schouler.) The power to suspend this writ is vested in Congress, tho in case of war or other immediate contingencies, the President, as chief executive or the commander-in-chief of the armies of the United States, may suspend it. During the Civil War, President Lincoln suspended this writ on several occasions.

Bill of Attainder.—"No bill of attainder or *ex post facto* law shall be passed." (Art. I, Sec. 9, Cl. 3.)

This provision is taken almost bodily from the earlier State Constitutions and declarations of rights. The same prohibition is applied to the States in the following section of the Constitution. (Art. I, Sec. 10, Cl. 1.) "A bill of attainder is an act of the legislature which imposes punishment without due process of the law. Thruout the history of England we are met with the great frequency with which this means was exercised by the sovereign to rid himself of his enemies or to secure their property. In a decision of the United States Supreme Court in its early history a justice stated that "with few exceptions, the advocates of such laws were stimulated by ambition or personal resentment and malice. To prevent such and similar acts of violence and injustice I believe the Federal and State legislatures were prohibited from passing any bill of attainder."

The Supreme Court of the United States has declared an *ex post facto* law to be

"Every law that aggravates a crime, or makes it greater than when it was committed;

"Every law that changes the punishment and inflicts a greater punishment than the law annexed to the crime when committed;

"Every law that alters the legal rules of evidence and receives less or different testimony than the law required at the time of the commission of the offense, in order to convict the offender." The English judiciary has always maintained that the law applied only to criminal law, which view has been accepted by the American courts, tho some of the most eminent jurists have maintained that it was the intention of the framers of the Constitution that it apply equally to the civil law. As a result, civil laws may be retroactive; criminal laws cannot be retroactive. This and the provisions regarding the habeas corpus act and the bill of attainder form one of the strongest safeguards to liberty and freedom in and the possession of property in our country.

Ethics thru Literature

By HARRIET E. PEET, State Normal School, Salem, Mass.

Telling the Truth—Part II

TRUTH AND LOYALTY

The essential thing in all morality is loyalty to an ideal, whatever that ideal may be. All persons, stupid or intelligent, may be moral in a primitive sense, but to go beyond this elemental will-action into the subtle discriminations which the moral order requires, calls for all the powers of the highest bred intellect and subtlest adjustments of the emotions. To gather together all the factors in any moral situation, untangle the web, find the right balance of relations and do justice to all, requires not merely good-will but memory, imagination, an impersonal outlook and strength of purpose. To be moral, therefore, is no easy task to be left to people who are not clever enough to be wicked. It is a battle with a fine old war-cry that demands the most valiant fighting, and the bravest, strongest, most enduring persons. The war-cry is "Life," for the moral order is merely the way to life, just as evil is the path-way to death.

The necessity of giving thought to the moral order is, perhaps, nowhere more apparent than when there is a conflict between truth and honor, or truth and loyalty to a friend. It destroys our self-respect when we make a compromise with truth, but what, after all, is literal truth compared with a nation's trust, or the life of a friend? In a tie must one or the other be sacrificed? If so, which?

If a lie would stop a railway train which was about to kill a dear friend, would it be right to lie? If a person were dangerously ill but might pull thru if his courage were kept up, would it be right to tell him of his danger if he asked direct questions? If a soldier were guarding a store of powder, would it be right for him to deny its presence if asked? If a young woman were trusted with a friend's engagement which was unannounced, would it be right for her to deny it? If you had accepted tickets to an entertainment which proved a failure, would it be right to say it was enjoyable, when asked? If to a man's knowledge his wife had made a petty theft, would it be right for him to deny it?

The complications between truth and loyalty are endless, but the solution of the problems is simple to understand, if, perhaps, more difficult to follow. All situations, such as guarding a secret entrusted to one by a friend, country, or by whatever situation that implies an obligation, require, as Mrs. Cabot suggests in her book on "Every Day Ethics," thoughtful preparation so that the situation where the conflict would occur never takes place. If one has a sacred trust, all conversations with in-

quisitive people should be so controlled and managed that it is impossible for them to ask questions. This is always possible in matters of minor importance, but when a situation arises where it is not, the "whole situation" or the larger truth must be considered. The loss of a human life is undoubtedly a greater calamity than the telling of a petty falsehood as a run to stop a train. The moral order would suffer more by the cruelty of the one than the petty misdemeanor of the other.

Many situations may be prepared for and the conflict prevented, but there is one which is a genuine conflict and most difficult to meet. It goes far deeper than verbal literal truth into the realm where truth and right are synonymous. It is the conflict which comes between love and duty, where to do right means desertion of a dear friend in time of need. It was the conflict which Lady Macbeth felt when she chose to uphold her husband in his wrongdoing instead of doing that which must have seemed to her right. In such conflicts, loyalty to a friend or a single person must give way to truth or right, just as, in the case illustrated by the railway train, truth in a narrow sense must give way to humanity.

Children cannot be made to follow these finer discriminations, but they can be helped by having their attention called to the sacredness of a trust with the necessity of guarding such, and the necessity of standing for right when it is in conflict with friendship. Questions similar to the following may be discussed and stories told to illustrate the truth.

GUARDING A SECRET

If a person is entrusted with an honorable secret, what is his duty in regard to it?

Is it right to lie when questions are asked about a secret?

How can inquisitive questions be prevented so that a secret is guarded without telling a lie?

Is it right to ask questions of a person whom you think is guarding a secret? Why or why not?

How can boys and girls help each other guard honorable secrets?

TRUTH AND LOYALTY

If a friend has a plan which he wants carried thru, is it always right to help him?

When is it right?

When is it wrong?

What is the result of helping a friend in wrongdoing?

If a dear friend has done wrong, is it right for you to hide his wrong if it is going to injure someone else?

When is it right to be loyal to a friend?

When must loyalty to a friend give way to loyalty to right?

MACBETH

Macbeth was an ambitious cousin of the gentle Duncan, King of Scotland. On a stormy day he is returning home victorious in battle, when he and his companion, Banquo, cross a lonely heath. Three withered hags appear, wicked-looking witches with beards like men and deep, croaking voices. They hail the two warriors. To Macbeth they say:

First Witch. All hail, Macbeth! hail to thee, thane of Glamis!

Second Witch. All hail, Macbeth! hail to thee, thane of Cawdor!

Third Witch. All hail, Macbeth, that shalt be king hereafter!

To Banquo they say:

First Witch. Hail!

Second Witch. Hail!

Third Witch. Hail!

First Witch. Lesser than Macbeth, and greater.

Second Witch. Not so happy, yet much happier.

Third Witch. Thou shalt get kings, tho thou be none: So all hail, Macbeth and Banquo!

To be called King of Scotland so fills the ambitious mind of Macbeth with pleasure that he stands like one in a trance. He pictures himself already king and Lady Macbeth, his wife, as queen. By fair means or foul he would become such, so he thinks; and, that his "dearest partner," Lady Macbeth, may know of the greatness that is to be hers he writes her of the witches' prophecy without delay.

Lady Macbeth knew of Macbeth's ambitious nature, but she knew also that altho in his heart he wished evil done he could not carry an evil project thru on account of cowardice. As she reads his letter she resolves that since he is weak in his resolution "she will pour her courageous spirit in his ear" when she sees him and "chastise him with the valor of her tongue."

Even as Lady Macbeth is thinking these thoughts a messenger enters saying that Duncan, the king, will spend the night in Macbeth's castle. When Macbeth arrives Lady Macbeth tells of her plan for the murder of the king. At night, after the gentle old king has gone to his chamber, she sends him and his attendants a sleeping-potion. As midnight approaches Macbeth goes to the king's chamber to murder him, but the sounds startle him and he returns to Lady Macbeth with the deed undone. She upbraids him. Again he tries, hesitates, and at last, as the bell of midnight tolls, he screws his courage up to the fearful deed. In his fright he forgets to leave his daggers with the grooms. He returns to Lady Macbeth, telling of the fearful sounds that he had heard. He seemed to hear voices that cried, "Sleep no more! Cawdor shall sleep no more! Macbeth shall sleep no more!"

Lady Macbeth. Who was it that thus cried? Why, worthy thane,
You do unbend your noble strength, to think

So brainsickly of things. Go get some water,
And wash this filthy witness from your hand.
Why did you bring these daggers from the place?
They must lie there: go carry them, and smear
The sleepy grooms with blood.

Macbeth. I'll go no more:
I am afraid to think what I have done;
Look on't again I dare not.

Lady Macbeth. Infirm of purpose!
Give me the daggers: the sleeping and the dead
Are but as pictures: 'tis the eye of childhood
That fears a painted devil. If he do bleed,
I'll gild the faces of the grooms withal;
For it must seem their guilt. [*Exit. Knocking within.*]

Macbeth. Whence is that knocking?
How is't with me, when every noise appalls me?
What hands are here? ha! they pluck out mine eyes.
Will all great Neptune's ocean wash this blood
Clean from my hand? No; this my hand will rather
The multitudinous seas incarnadine,
Making the green one red.

Re-enter LADY MACBETH.

Lady Macbeth. My hands are of your colour; but I
shame
To wear a heart so wide. [*Knocking within.*] I hear
a knocking

At the south entry: retire we to our chamber:
A little water clears us of this deed:
How easy is it, then! Your constancy
Hath left you unattended. [*Knocking within.*] Hark!
more knocking.

Get on your nightgown, lest occasion call us
And show us to be watchers. Be not lost
So poorly in your thoughts.

Macbeth. To know my deed, 'twere best not know
myself. [*Knocking within.*]

One wicked deed leads to another. After the murder of Duncan, Macbeth fears that Banquo suspects him of Duncan's death. His death is the next of a long series of wicked deeds. Macbeth remembers the witches' prophecy that Banquo's children would be kings. Again he visits the weird sisters and finds them brewing a powerful charm in a great cauldron about which they dance.

First Witch. Thrice the brinded cat hath mew'd.

Second Witch. Thrice and once the hedge-pig
whined.

Third Witch. Harpier cries 'Tis time, 'tis time.'

First Witch. Round about the cauldron go;
In the poison'd entrails throw.

Toad, that under cold stone
Days and nights has thirty-one
Swelter'd venom sleeping got,
Boil thou first i' the charmed pot.

All. Double, double toil and trouble;
Fire burn and cauldron bubble.

Second Witch. Fillet of a fenny snake,
In the cauldron boil and bake;
Eye of newt and toe of frog,
Wool of bat and tongue of dog,
Adder's fork and blind-worm's sting,
Lizard's leg and howlet's wing,
For a charm of powerful trouble,
Like a hell-broth boil and bubble.

All. Double, double toil and trouble;
Fire burn and cauldron bubble.

Third Witch. Scale of dragon, tooth of wolf.
Witches' mummy, maw and gulf
Of ravin'd salt-sea shark,
Root of hemlock digg'd i' the dark,
Liver of blaspheming Jew,
Gall of goat, and slips of yew
Sliver'd in the moon's eclipse,
Nose of Turk and Tartar's lips,
Finger of birth-strangled babe
Ditch-deliver'd by a drab,
Make the gruel thick and slab:
Then the charm is firm and good.

All. Double, double, toil and trouble;
Fire burn and cauldron bubble.

Second Witch. Cool it with a baboon's blood,

It is after the charm is wound up that Macbeth is told that no harm can come to him until a famous forest comes to his castle on Dunsinane. The spirits say:

Macbeth shall never vanquished be until
Great Birnam wood to high Dunsinane hill
Shall come against him.

Macbeth is then shown Banquo's children, who are to be the kings after him. At last a spirit arises and cries:

Macbeth! Macbeth! Macbeth! beware Macduff.
Beware the thane of Fife. Dismiss me. Enough.

This last prophecy leads Macbeth to do the most cruel deed of all. He sends men to Macduff's castle, who, when they find Lady Macduff and her little children unprotected, put them to death.

As one wicked deed follows another Macbeth and Lady Macbeth grow more and more uneasy, tormented as they are by the wicked deeds they have done. At last a time comes when Lady Macbeth can no longer sleep quietly. Haunted by the memory of the blood that fell upon her hand from the daggers when Duncan was murdered, she walks in her sleep at night, trying to wash it off.

Doctor. What is it she does now? Look, how she rubs her hands.

Gentlewoman. It is an accustomed action with her, to seem thus washing her hands: I have known her continue in this a quarter of an hour.

Lady Macbeth. Yet here's a spot.

Doctor. Hark! she speaks: I will set down what comes from her, to satisfy my remembrance the more strongly.

Lady Macbeth. Out, damned spot! out, I say!—One, two: why, then 'tis time to do't.—Hell is murky!—Fie, my lord, fie! a soldier, and afeard? What need we fear who knows it, when none can call our power to account?—Yet who would have thought the old man to have had so much blood in him?

Doctor. Do you mark that?

Lady Macbeth. The thane of Fife had a wife: where is she now?—What, will these hands ne'er be clean?—No more o' that, my lord, no more o' that: you mar all with this starting.

Doctor. Go to, go to; you have known what you should not.

Gentlewoman. She has spoke what she should not, I am sure of that: heaven knows what she has known.

Lady Macbeth. Here's the smell of the blood still: all the perfumes of Arabia will not sweeten this little hand. Oh, oh, oh!

Doctor. What a sigh is there! The heart is sorely charged.

Gentlewoman. I would not have such a heart in my bosom for the dignity of the whole body.

Doctor. Well, well, well,—

Gentlewoman. Pray God it be well, sir.

Doctor. This disease is beyond my practice: yet I have known those which have walked in their sleep who have died holily in their beds.

Lady Macbeth. Wash your hands, put on your nightgown; look not so pale.—I tell you yet again, Banquo's buried; he cannot come out on's grave.

Doctor. Even so?

Lady Macbeth. To bed, to bed! there's knocking at the gate: come, come, come, give me your hand. What's done cannot be undone. To bed, to bed, to bed! [Exit.]

Macbeth, too, is haunted by his crimes. He finds that he who ought to have won honor has won only curses. He says:

I have lived long enough: my way of life
Is fall'n into the sear, the yellow leaf;
And that which should accompany old age,
As honour, love, obedience, troops of friends,
I must not look to have; but, in their stead,
Curses, not loud but deep, mouth-honour, breath,
Which the poor heart would fain deny, and dare not.

At last Macduff, the father of the little children whom Macbeth had murdered, raises an army to take Macbeth's castle by storm and make Malcolm, the son of Banquo, king. Macbeth, believing he has a charmed life, since no harm can come to him until Birnam wood comes to Dunsinane, stands upon the battlement ready to meet Macduff. He hangs his banners out and says, "Our castle's strength will laugh a siege to scorn"; but even as he speaks calamity comes upon him. Lady Macbeth, worn out by her uneasy conscience, dies. Macbeth hears a cry of women and asks:

Wherefore was that cry?

Seyton. The queen, my lord, is dead.

Macbeth. She should have died hereafter;
There would have been a time for such a word.
To-morrow, and to-morrow, and to-morrow,
Creeps in this petty pace from day to day
To the last syllable of recorded time,
And all our yesterdays have lighted fools
The way to dusty death. Out, out, brief candle!
Life's but a walking shadow, a poor player
That struts and frets his hour upon the stage
And then is heard no more: it is a tale
Told by an idiot, full of sound and fury,
Signifying nothing.

Macduff's army approaches. To hide themselves from sight his soldiers carry branches of trees taken from Birnam wood. Macbeth sees what seems to be the wood moving and knows that his hour is come, that Birnam wood is come to Dunsinane. He meets Macduff. They fight and Macbeth falls.

Macduff. Then yield thee, coward,
And live to be the show and gaze o' the time:
We'll have thee, as our rarer monsters are,
Painted upon a pole, and underwrit,
'Here may you see the tyrant.'

Macbeth. I will not yield,
To kiss the ground before young Malcolm's feet,
And to be baited with the rabble's curse.
Tho Birnam wood be come to Dunsinane,
And thou opposed, being of no woman born,
Yet I will try the last. Before my body
I throw my warlike shield. Lay on, Macduff,
And damn'd be him that first cries 'Hold, enough!'

[*Ezeunt, fighting. Alarums.*]

QUESTIONS FOR DISCUSSION

What started Macbeth in his wicked deeds?
When and where was he most to blame?
What was the cause of Lady Macbeth's wrongdoing?
For what was she most to blame?
When should she have chosen differently?
Who suffered for Macbeth's crime?
Who suffered for Lady Macbeth's sin?
What was the difference in the wrongdoing of Macbeth and Lady Macbeth?
Would either have committed the crimes alone?
What comes from being loyal to a person in wrongdoing?

A Simple Method of Enlargement

By U. G. WILSON, New York

Conformably to the principle of proportion, a map, chart or picture for the blackboard, or a more permanent map on paper for the school-room, may be enlarged by the following simple method.

The rectangle bounding the map of North America (see illustration) is used as a basis of proportion, tho the divisions of the smaller map, or copy, will be proportionate to the divisions of the enlarged map in height and width.

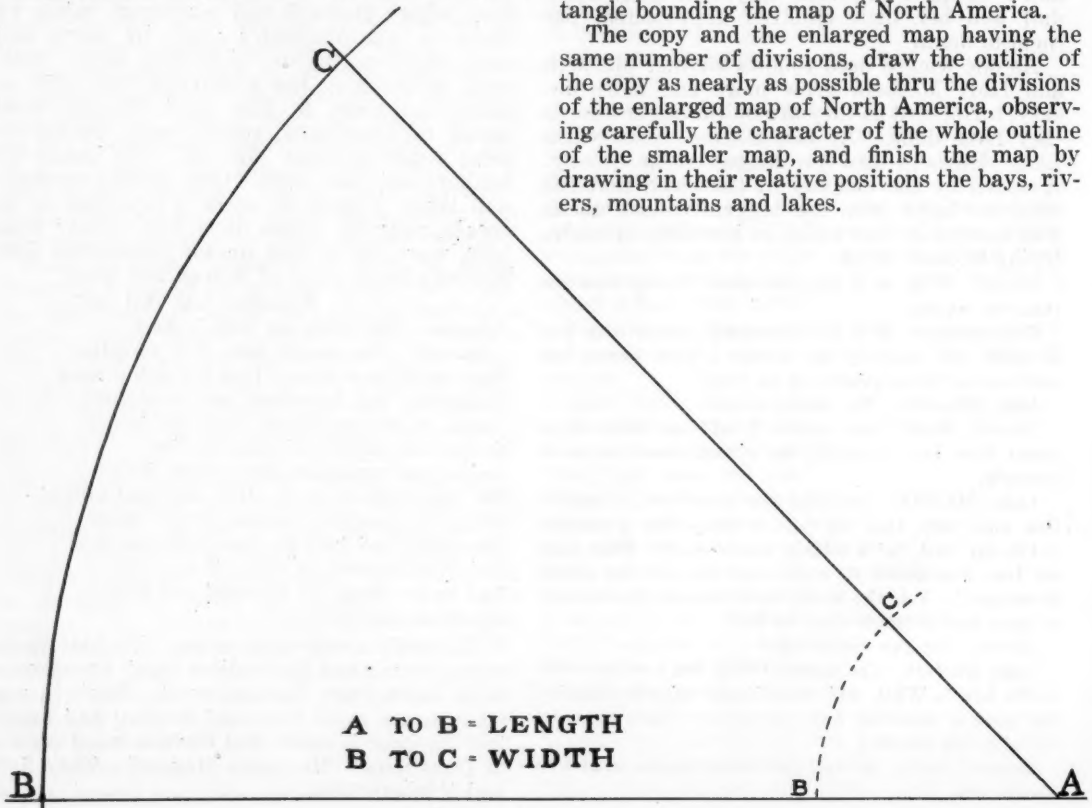
Draw a horizontal line A-B, representing the height of the map, with a vortex at A. (See

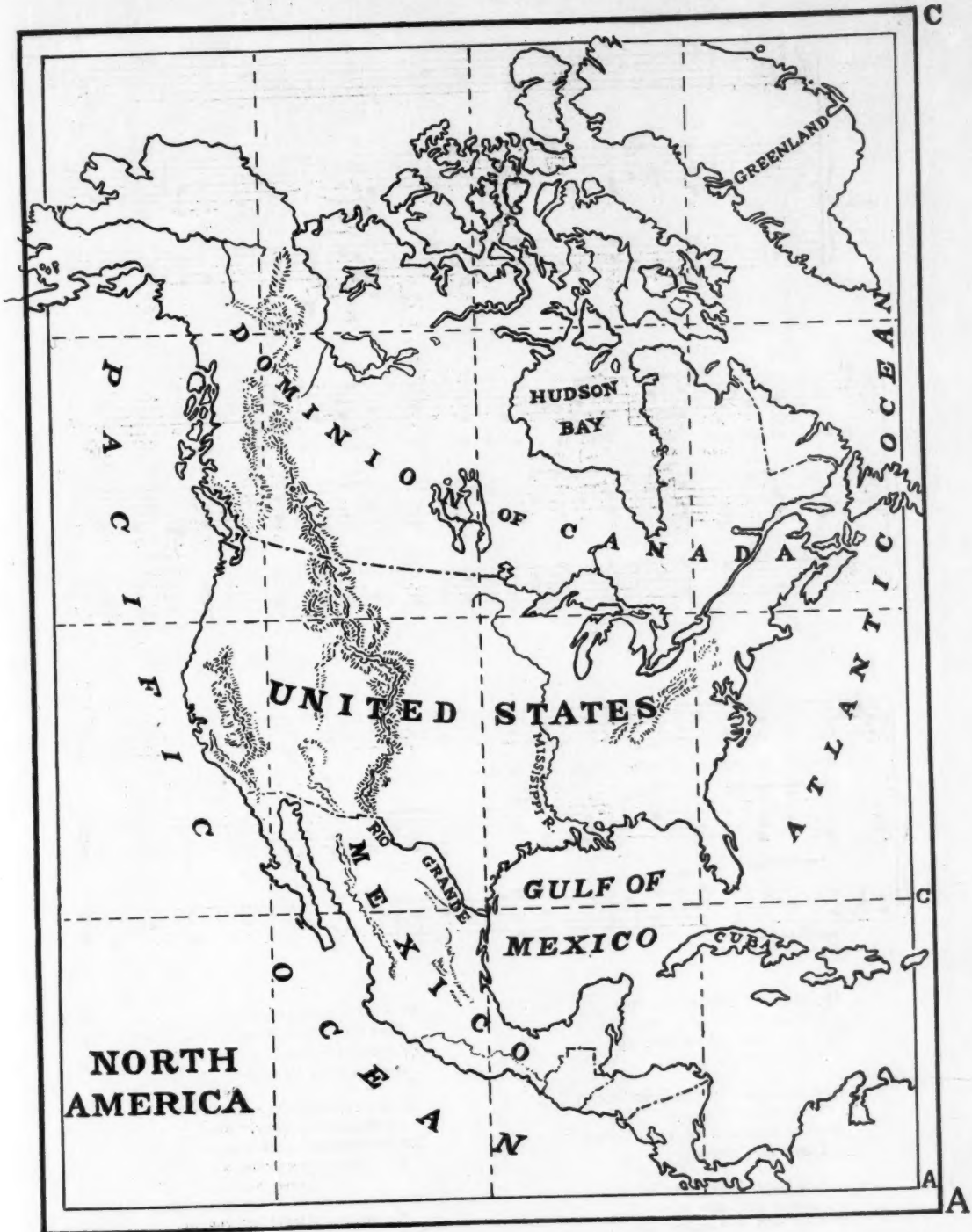
diagram.) Placing the point of the compass at A, describe an arc from B, on the horizontal line, to the given width at C on the oblique line.

Draw an oblique line to C from A, completing the method for dividing (or increasing) any given space into subdivisions.

The length of the first subdivision from A to B on the horizontal line (dotted line), and the width from B on the horizontal line to C on the oblique line (dotted line) gives the first subdivision (rectangle) in proportion to the rectangle bounding the map of North America.

The copy and the enlarged map having the same number of divisions, draw the outline of the copy as nearly as possible thru the divisions of the enlarged map of North America, observing carefully the character of the whole outline of the smaller map, and finish the map by drawing in their relative positions the bays, rivers, mountains and lakes.





THE OLD MAN IN THE WOOD.

Moderato.

VOICE.

PIANO.

mf *sf*

1. There

1. was an old man who lived in a wood As you shall plain - ly see, He

1. thought he could do more work in a day Than his wife could do in three.

poco rit.

2. But you must milk the tidy cow
For fear she should go dry,
And you must feed the little pigs
That are within the sty.

3. And you must watch the speckled hen
For fear she lay away,
And you must wind the spool of yarn
That I spun yesterday.

4. "Poor Tidy! Tidy!" he did say
I prithee good cow stand still,
If ever I milk thee another day
'Twill be against my will.

5. He went to feed the little pigs
That were within the sty,
He knocked his head against the door
And made the blood to fly.

6. He went to watch the speckled hen
For fear she lay away,
But he forgot the spool of yarn
His wife spun yesterday.

7. And then he vowed by sun and moon
And the green leaves on the tree,
If his wife never did a day's work in her life
She should ne'er be blamed by he.

This is an old Scottish song founded upon a lengthy poem of the 16th century.

The World We Live In

A Frenchman has found that by treating with chemicals the portion of the sugar-cane left after the sugar has been extracted, a beautiful white wax can be obtained. It is believed this wax will prove to be valuable.

Martha Washington's portrait was removed from postal-cards some time ago, but a new reply-card is to be issued with her face on it. The message-card will have George Washington's head, and the reply-card will have Martha's.

Among the old patents in the patent-office, one to Abraham Lincoln has been found, dated May 22, 1849. It was on a plan for buoying boats over shoals in rivers.



King Nicolas and Queen Milena Cheered by Their Faithful Montenegrinos

Mrs. Julia Ward Howe, "The Grand Old Lady of America," is dead. She died at her summer home in Newport, of pneumonia, after an illness of only a few days' duration. The United States of America, and, in fact, all the civilized world, will mourn her loss. She is perhaps best known as the author of the mighty hymn which served almost as a battle cry in the Civil War, "Mine Eyes Have Seen the Glory of the Coming of the Lord," which was sung to the tune "John Brown's Body Lies Moulding in the Grave." She was an ardent woman suffragist, the author of several songs, numerous poems, besides being one of the most brilliant conversationalists the country has known. Her *bon mots* were famous among her intimate friends. Perhaps one of the best known is her remark when her husband was pointing out to her the Charitable Eye and Ear Hospital in Boston, "I didn't know there was a charitable eye or ear in Boston."

Rebecca Harding Davis, well known as an author of short stories and novels, and for several years an editorial writer for the *New York Tribune*, died Sept. 29th, at the home of her son, Richard Harding Davis, Mt. Kisco, N. Y., in the 80th year of her age.

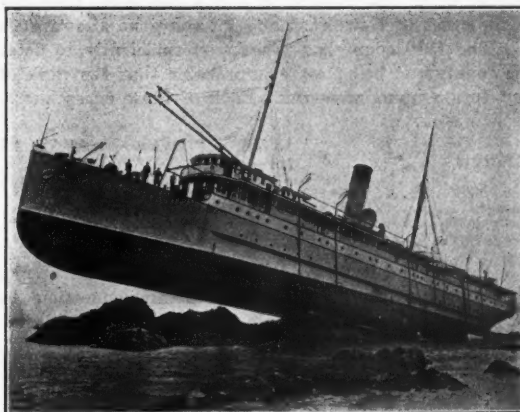
Following an explosion and fire on Oct. 1st, which completely wrecked the building occupied by the Times-Mirror Publishing Company, of Los Angeles, Cal., and resulted in the probable death of more than a score of employees of the newspaper, two dynamite bombs or infernal machines were discovered by the police, one at the home of the publisher of the newspaper, General Harrison Gray Otis, and the other on the premises occupied by F. J. Zeehandelaar, secretary of the Los Angeles Merchants' and Manufacturers' Association. The Los Angeles city council has offered \$25,000 to be used in investigating the blowing up of the Times Building, \$1,500 of which is offered as a reward for information leading to the conviction of the guilty person or persons.

Although Walter Wellman failed in his attempt to cross the ocean in his dirigible balloon, he has made the world's record for remaining in the air the longest time of any aviator. His record was seventy hours in the air without descending. Wellman and his five companions were caught in the big storm that swept Cuba, when he was two hundred and fifty miles northwest of Bermuda. His balloon was completely destroyed. He and his companions were all rescued by the ship *Trent*.

Despite the failure of the venturesome aviator, his trip was a remarkable one, and, what is more, he says he will build another dirigible balloon and try again to cross the Atlantic Ocean.

Frozen Uruguayan Meat

Consul Frederic W. Goding writes that the first shipment of frozen meat from Uruguay to the United States was included in the cargo of the steamer *Vasari*, leaving Montevideo on July 11, 1910. It consisted of two carcasses of mutton, with one hind and one fore-quarter of beef, and is sent as a sample of meat grown in this Republic. If the venture is successful, it may mean further shipments.



An Extraordinary Photograph: The *Princess May* on the Alaskan Rocks. Her Bow Is Forty Feet in the Air

Cities of Over 25,000 Inhabitants

Census Population Totals Recapitulated for Reference and Comparison

Following is a recapitulation of the bulletins issued by the Bureau of the Census to and including September 29, 1910, announcing the population of cities having 25,000 or more inhabitants, with comparative data for 1900 and 1890 added, together with percentage increases for each of the past two decades.

The following table is a complete roll of the thirty-eight cities which had in 1900 a population of 100,000 or more, to which have been added nine cities, namely, Albany, N. Y., Atlanta, Ga., Birmingham, Ala., Bridgeport, Conn., Cambridge, Mass., Dayton, Ohio, Grand Rapids, Mich., Lowell, Mass., and Richmond, Va., which have risen above the 100,000 limit since 1900. There are doubtless some other cities which will be found to have passed the 100,000 limit when the count is completed.

CITIES OF OVER 100,000 POPULATION.											
CITIES.	POPULATION.			P. C. OF INC.		CITIES.	POPULATION.			P. C. OF INC.	
	1910	1900	1890	1910	1890		1910	1900	1890	1910	1890
Albany, N. Y.....	100,253	94,151	94,923	6.5	0.8	Memphis, Tenn.....	102,320	64,495	.....	58.6	.....
Allegheny, Pa.....	(b)	129,896	105,287	.....	23.4	Milwaukee, Wis.....	285,315	204,468	31.0	39.5	.....
Atlanta, Ga.....	154,839	89,872	65,583	72.3	37.1	Minneapolis, Minn.....	202,718	164,788	.....	23.1	.....
Baltimore, Md.....	558,485	508,957	484,439	9.7	17.2	Newark, N. J.....	347,469	246,070	181,830	41.2	35.3
Birmingham, Ala.....	132,685	38,415	26,178	245.4	46.7	New Haven, Conn.....	133,605	108,027	81,298	23.7	32.9
Boston, Mass.....	670,585	560,892	448,477	19.6	25.1	New Orleans, La.....	339,075	287,104	242,039	18.1	18.6
Bridgeport, Conn.....	102,054	70,996	48,866	43.7	45.3	New York, N. Y.....	4,766,883	3,487,202	2,507,514	38.7	37.1
Buffalo, N. Y.....	423,715	352,387	255,664	20.2	37.8	Omaha, Neb.....	102,555	140,452	.....	27.0	.....
Cambridge, Mass.....	104,839	91,886	70,028	14.1	31.2	Paterson, N. J.....	125,600	105,171	78,347	19.4	34.2
Chicago, Ill.....	2,185,283	1,698,575	1,099,850	28.7	54.4	Philadelphia, Pa.....	1,549,008	1,298,697	1,046,964	19.7	23.6
Cincinnati, O.....	364,463	325,902	296,908	11.8	9.8	Pittsburg, Pa.....	533,905	451,512	343,904	18.2	31.3
Cleveland, O.....	560,663	381,768	261,353	46.9	46.1	Providence, R. I.....	224,326	175,597	132,146	27.8	32.9
Columbus, O.....	181,548	125,560	88,150	44.6	42.4	Richmond, Va.....	127,628	85,050	81,388	50.1	4.5
Dayton, O.....	116,577	85,333	61,220	36.6	39.4	Rochester, N. Y.....	218,149	162,608	133,896	34.2	21.4
Denver, Colo.....	213,381	133,859	106,713	59.4	25.4	St. Joseph, Mo.....	102,979	575,238	451,770	19.4	27.3
Detroit, Mich.....	465,766	285,704	205,876	63.0	38.8	St. Louis, Mo.....	687,029	575,238	451,770	19.4	27.3
Fall River, Mass.....	119,295	104,863	74,398	13.8	40.9	St. Paul, Minn.....	214,744	163,065	133,156	31.7	22.5
Grand Rapids, Mich.....	112,571	87,565	60,278	28.6	45.3	San Francisco, Cal.....	342,782	298,997	.....	14.6	.....
Indianapolis, Ind.....	233,650	169,164	105,436	38.1	60.4	Scranton, Pa.....	129,867	102,026	75,215	27.3	35.6
Jersey City, N. J.....	267,779	206,433	163,003	29.7	26.6	Syracuse, N. Y.....	137,249	108,374	88,143	26.6	23.0
Kansas City, Mo.....	248,351	163,572	132,716	51.7	23.4	Toledo, O.....	168,497	131,822	81,434	27.8	61.9
Los Angeles, Cal.....	102,479	50,395	.....	103.4	.....	Washington, D. C.....	331,069	278,718	230,392	18.8	21.0
Louisville, Ky.....	.....	204,731	161,129	.....	27.1	Worcester, Mass.....	145,986	118,421	84,655	23.3	39.9
Lowell, Mass.....	106,294	94,069	77,696	11.9	22.2						

a Decrease.

b Annexed to Pittsburg in 1907.

c Estimated population in 1890 of the area of present New York. The population of New York as it existed in 1890 was 1,515,301.

d Includes population of Allegheny as given above.

Altho the rates for individual cities vary widely, ranging from 6.5 to 245.4 per cent, it is rather noteworthy that there are eight important cities which have shown approximately the same rate of increase during the last decade, viz., Boston (19.6 per cent), Buffalo (20.2 per cent), New Orleans (18.1 per cent), Paterson (19.4 per cent), Philadelphia (19.7 per cent), Pittsburg (18.2 per cent), St. Louis (19.4 per cent), and Washington (18.8 per cent).

It should be remembered that in some instances, both in the table above and in the table for the group of smaller cities, the growth of a city may have been due in part to annexation of suburban territory. Except in the cases of New York and Pittsburg no allowance has been made for such annexation.

The 1910 count has progressed sufficiently to determine with practical certainty the eight largest cities in the country, it being quite improbable that the rank of the following cities in order of size will be changed by any future announcements. Each of these cities has a population exceeding 500,000.

CITIES OF OVER 500,000 INHABITANTS IN THE UNITED STATES.													
CITIES.	POPULATION.			RANK.			CITIES.	POPULATION.			RANK.		
	1910	1900	1890	1910	1900	1890		1910	1900	1890	1910	1900	1890
New York.....	4,766,883	3,437,202	2,507,414	1	1	1	Boston	670,585	560,892	448,477	5	5	5
Chicago.....	2,185,283	1,698,575	1,099,850	2	2	2	Cleveland	560,663	381,768	261,353	6	7	9
Philadelphia.....	1,549,008	1,293,697	1,046,964	3	3	3	Baltimore.....	558,485	508,957	434,439	7	6	6
St. Louis.....	687,029	575,238	451,770	4	4	4	Pittsburg.....	533,905	321,616	238,617	8	11	12

During the last two decades there has been no change in the rank of our five largest cities.

It may be interesting to note in this connection the rank of our own largest cities with foreign cities. Following is a list of the ten largest cities in the world, which embraces three of our own cities:

TEN LARGEST CITIES IN THE WORLD.										
CITIES.	YEAR OF CENSUS OR ESTIMATE.		POPULATION.	CITIES.	YEAR OF CENSUS OR ESTIMATE.		POPULATION.	CITIES.	YEAR OF CENSUS OR ESTIMATE.	
	1909	1909			1908	1908			1907	1907
1. London	1909	7,429,740		6. Berlin	1908	2,101,933				
2. New York	1910	4,766,883		7. Vienna	1909	2,085,888				
3. Paris	1906	2,763,393		8. St. Petersburg	1905	1,678,000				
4. Tokio	1908	2,186,079		9. Philadelphia	1910	1,549,008				
5. Chicago	1910	2,185,283		10. Moscow	1907	1,359,254				

Following is a table of cities of 25,000 to 100,000 inhabitants. The list includes 113 cities which had, in 1900, a population of 25,000 to 100,000, and 31 cities which have risen above the 25,000 limit since 1900. It is, of course, not as yet a complete list for 1910, since some other cities which had less than 25,000 population in 1900 will undoubtedly enter into this group.

CITIES OF FROM 25,000 TO 100,000 POPULATION.

CITIES.	POPULATION.			P. C. OF INC.		CITIES.	POPULATION.			P. C. OF INC.	
	1910	1900	1890	1910	1890		1910	1900	1890	1910	1890
Akron, O.	69,067	42,728	27,601	61.6	54.8	Malden, Mass.	44,404	33,664	23,031	31.9	46.2
Allentown, Pa.	51,913	35,416	25,228	46.6	40.4	Manchester, N. H.	70,063	56,987	44,126	22.9	29.1
Altoona, Pa.	52,127	38,973	30,337	33.8	28.5	Meriden, Conn.	27,265	24,296	21,652	12.2	12.2
Amsterdam, N. Y.	31,267	20,929	17,336	49.4	20.7	Mobile, Ala.	51,521	38,469	31,076	33.9	23.8
Atlantic City, N. J.	44,461	27,338	13,055	59.7	113.2	Montgomery, Ala.	30,346	21,883	.....	38.7	.....
Auburn, N. Y.	34,668	30,345	25,858	14.2	17.4	Mount Vernon, N. Y.	30,919	21,228	10,830	45.7	96.0
Augusta, Ga.	.....	39,441	33,300	.....	18.4	Muskogee, Okla.	25,273	4,254	.....	494.2	.....
Aurora, Ill.	29,807	24,147	19,688	23.4	22.6	Nashville, Tenn.	90,865	76,168	.....	.....	6.2
Battle Creek, Mich.	25,267	18,563	13,197	36.1	40.7	New Bedford, Mass.	96,652	92,442	40,793	54.3	53.3
Bay City, Mich.	45,166	27,628	27,839	63.5	00.8	New Britain, Conn.	.....	25,998	16,519	.....	57.4
Bayonne, N. J.	55,545	32,722	19,033	69.7	71.9	Newburgh, N. Y.	25,473	24,943	23,087	2.1	8.0
Binghamton, N. Y.	48,443	39,647	35,005	22.2	13.3	Newcastle, Pa.	28,339	11,600	28.0	144.3	.....
Brooklyn, Mass.	.....	40,063	27,294	.....	46.8	Newport, Ky.	28,301	24,918	.....	13.6	.....
Brookline, Mass.	27,792	19,935	12,103	39.4	64.7	Newport, R. I.	27,149	22,441	19,457	21.0	15.3
Butte, Mont.	.....	30,470	10,723	.....	184.2	New Rochelle, N. Y.	28,867	14,720	9,057	96.1	62.5
Camden, N. J.	94,538	75,935	58,313	24.5	30.2	Newton, Mass.	39,806	33,587	24,379	18.5	37.8
Canton, O.	50,217	30,667	26,189	63.7	17.1	Niagara Falls, N. Y.	30,445	19,457	.....	56.5	.....
Cedar Rapids, Ia.	.....	25,656	18,020	.....	42.4	Norfolk, Va.	67,452	46,624	34,871	44.7	39.7
Charleston, S. C.	.....	55,807	54,955	.....	1.6	Oakland, Cal.	66,960	46,682	.....	37.5	.....
Chattanooga, Tenn.	.....	30,154	29,100	.....	3.6	Oklahoma City, Okla.	64,205	10,037	4,151	539.7	141.8
Chelsea, Mass.	32,452	34,072	27,909	04.8	22.1	Oshkosh, Wis.	33,062	28,284	22,836	16.9	23.9
Chester, Pa.	32,988	20,226	.....	68.0	.....	Passaic, N. J.	54,773	27,777	13,028	97.2	113.2
Colorado Springs, Colo.	29,078	21,085	11,140	37.9	89.3	Pawtucket, R. I.	51,622	39,231	27,633	31.5	42.0
Council Bluffs, Ia.	.....	25,802	21,474	.....	20.2	Peoria, Ill.	66,950	56,100	41,024	19.3	36.7
Covington, Ky.	53,270	42,938	37,371	24.1	14.9	Pittsfield, Mass.	32,121	21,766	17,281	47.6	26.0
Dallas, Tex.	92,104	42,638	38,067	116.0	12.0	Portland, Me.	.....	50,145	36,425	.....	37.7
Danville, Ill.	27,871	16,354	11,491	70.4	42.3	Portland, Ore.	90,426	46,355	.....	94.9	.....
Davenport, Ia.	43,028	35,254	26,872	22.1	31.2	Portsmouth, Va.	33,190	17,427	13,268	91.5	31.3
Des Moines, Ia.	86,368	62,139	50,093	39.0	24.0	Poughkeepsie, N. Y.	27,926	24,029	22,206	16.3	8.2
Dubuque, Ia.	38,494	36,297	30,311	6.1	19.7	Pueblo, Colo.	44,395	28,157	24,558	57.7	14.7
Duluth, Minn.	.....	52,969	33,115	.....	60.0	Quincy, Ill.	.....	36,252	31,494	.....	15.1
Easton, Pa.	28,523	25,238	14,431	13.0	74.3	Quincy, Mass.	32,642	23,899	16,723	36.6	42.9
East Orange, N. J.	34,371	21,506	13,282	59.8	61.9	Racine, Wis.	38,002	29,102	21,014	30.6	38.5
East St. Louis, Ill.	58,547	29,655	15,169	97.4	95.5	Reading, Pa.	96,071	78,961	58,661	21.7	34.6
Elgin, Ill.	25,976	22,433	17,823	15.8	25.9	Rockford, Ill.	45,401	31,051	23,584	46.2	31.7
Elizabeth, N. J.	.....	52,130	37,764	.....	38.0	Sacramento, Cal.	44,696	29,282	26,386	52.6	11.0
Elmira, N. Y.	37,176	35,672	30,893	4.2	15.5	Saginaw, Mich.	50,510	42,345	46,322	19.3	08.6
Erie, Pa.	66,525	52,733	40,634	26.2	29.8	Salem, Mass.	43,697	35,956	30,801	21.5	16.7
Evansville, Ind.	69,647	59,007	50,756	18.0	16.3	Salt Lake City, Utah.	.....	53,531	44,843	.....	19.4
Everett, Mass.	33,454	24,336	11,068	37.6	119.9	San Antonio, Tex.	96,614	53,321	37,673	31.2	41.5
Fitchburg, Mass.	.....	31,531	22,037	.....	43.1	Savannah, Ga.	65,064	54,244	43,189	19.9	25.6
Flint, Mich.	38,530	13,103	9,803	194.2	33.7	Schenectady, N. Y.	73,826	31,682	19,902	129.9	59.2
Fort Wayne, Ind.	33,933	45,115	35,393	41.7	27.5	Seattle, Wash.	.....	80,671	42,837	.....	88.3
Fort Worth, Tex.	73,312	26,688	23,076	174.7	15.7	Sioux City, Ia.	47,828	33,111	37,806	44.4	012.4
Galveston, Tex.	36,981	37,789	29,084	02.1	29.9	Somerville, Mass.	77,236	61,643	40,152	25.3	53.5
Gloucester, Mass.	.....	26,121	24,651	.....	6.0	South Bend, Ind.	53,684	35,999	21,819	49.1	65.0
Harrisburg, Pa.	.....	50,167	39,385	.....	27.4	South Omaha, Neb.	.....	26,001	8,062	.....	222.5
Hartford, Conn.	98,915	79,850	53,320	23.9	50.0	Spokane, Wash.	.....	36,948	19,922	.....	85.0
Haverhill, Mass.	44,115	37,175	27,412	18.7	35.6	Springfield, Ill.	51,678	34,159	24,963	51.3	40.5
Hoboken, N. J.	70,324	59,364	43,648	18.5	36.0	Springfield, Mass.	88,926	62,059	44,179	33.3	40.5
Holyoke, Mass.	57,730	45,712	35,637	26.3	28.3	Springfield, Mo.	35,201	23,267	21,850	51.3	6.5
Houston, Tex.	78,800	44,633	27,557	76.6	62.0	Springfield, O.	.....	38,253	31,895	.....	19.9
Jackson, Mich.	31,433	25,180	20,798	24.8	21.1	Superior, Wis.	.....	31,091	11,983	.....	159.5
Jacksonville, Fla.	.....	28,429	17,201	.....	65.3	Tacoma, Wash.	.....	37,714	36,006	.....	4.7
Jamestown, N. Y.	31,297	22,892	16,038	36.7	42.7	Taunton, Mass.	34,259	31,036	25,448	10.4	22.0
Johnstown, Pa.	55,482	35,396	21,805	54.4	64.8	Terre Haute, Ind.	58,157	36,673	30,217	52.6	21.4
Joliet, Ill.	34,670	29,363	23,264	18.1	26.2	Topeka, Kan.	.....	33,608	31,007	.....	8.4
Joplin, Mo.	32,073	26,023	9,943	23.2	161.7	Trenton, N. J.	.....	73,307	57,458	.....	27.6
Kalamazoo, Mich.	39,437	24,404	17,853	61.6	36.7	Troy, N. Y.	76,813	60,651	60,956	.....	00.5
Kansas City, Kan.	.....	51,418	38,316	.....	34.2	Utica, N. Y.	74,419	56,383	44,007	32.0	28.1
Kingston, N. Y.	25,908	24,535	21,261	5.6	15.4	Waltham, Mass.	27,834	23,481	18,707	18.5	25.5
Knoxville, Tenn.	.....	32,637	22,535	.....	44.8	Waterbury, Conn.	73,141	45,859	28,646	59.5	60.1
La Crosse, Wis.	30,417	28,895	25,090	5.3	15.2	Waterloo, Ia.	26,693	12,580	6,674	112.2	88.5
Lancaster, Pa.	47,227	41,459	32,011	13.9	29.5	Watertown, N. Y.	26,730	21,696	14,725	23.2	47.3
Lansing, Mich.	31,229	16,485	13,102	89.4	25.8	Wheeling, W. Va.	.....	38,878	34,522	.....	12.6
Lawrence, Mass.	85,892	62,559	44,654	37.3	40.1	Wilkes-Barre, Pa.	67,105	51,721	37,718	29.7	37.1
Lexington, Ky.	.....	26,369	21,667	.....	22.3	Williamsport, Pa.	31,860	28,757	27,132	10.8	6.0
Lincoln, Neb.	.....	40,169	55,154	.....	027.3	Wilmington, Del.	87,411	76,508	61,431	14.3	34.5
Little Rock, Ark.	45,941	38,307	25,874	19.9	48.1	Woonsocket, R. I.	38,125	28,204	20,830	38.7	35.4
Lynchburg, Va.	29,949	18,891	19,709	56.1	04.2	Yonkers, N. Y.	79,803	47,921	32,033	66.5	49.6
Lynn, Mass.	89,336	68,513	55,727	30.4	22.9	York, Pa.	44,750	33,708	20,793	32.8	62.1
McKeesport, Pa.	42,694	34,227	20,741	24.7	65.0	Youngstown, O.	.....	44,885	33,220	.....	115.2

a Decrease.

The cities showing the highest rates of increase up to September 30, arranged in order of their rates, are as follows:

HIGHEST PERCENTAGES OF INCREASE ANNOUNCED UP TO SEPTEMBER 30.

CITIES.	POPULATION, 1910	RATE OF INCREASE, 1900 TO 1910	CITIES.	POPULATION, 1910	RATE OF INCREASE, 1900 TO 1910
1. Oklahoma City, Okla.	64,205	539.7	7. Dallas, Tex.	92,104	116.0
2. Muskogee, Okla.	25,278	494.2	8. Waterloo, Ia.	26,693	112.2
3. Birmingham, Ala.	132,685	245.4	9. East St. Louis, Ill.	58,547	97.4
4. Flint, Mich.	38,560	194.2	10. Passaic, N. J.	54,773	97.2
5. Fort Worth, Tex.	73,312	174.7	11. New Rochelle, N. Y.	28,867	96.1
6. Schenectady, N. Y.	72,826	129.9	12. Portsmouth, Va.	33,190	90.5

Revolution In Portugal

The long-impending revolt has taken place in Portugal, and the monarchy was overthrown in a night. The following is condensed from the account as given in *The Independent*:

A fanatical royalist named Santos, a lieutenant of the General Staff, recently released from an insane asylum, shot and mortally wounded Professor Bombarda, whom he regarded as responsible for his detention in the asylum. The republican newspaper *Seculo*, on October 3, denounced this as a political assassination. A mob formed in the street, a couple of priests were stoned, and a few shots exchanged with the po-

of fierce and confused conflict the republicans were driven back up the avenue. Their leader, Carlos Reis, a retired admiral, thinking the cause lost because he did not hear the signal guns indicating that the navy had mutinied, committed suicide. The republicans rallied, however, and being augmented by more deserters from the army and well-armed civilians, they made an attack upon the royal palace of Necessidades.

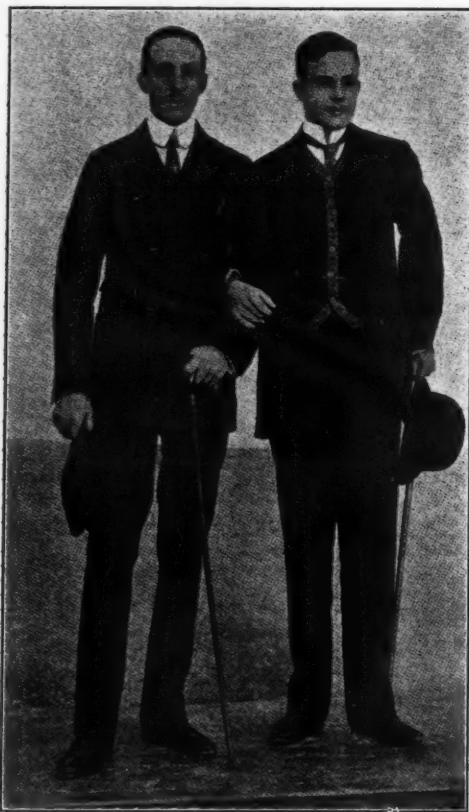
Three of the Portuguese cruisers at anchor in the Tagus, the *Adamastor*, *San Rafael* and *Dom Fernando*, hoisted the republican flag of red and green, and taking positions close to the shore, opened a bombardment of the city. The flagship *Dom Pedro* and the cruiser *Dom Carlos* did not desert the royalist cause until the following morning, but they abstained from firing on the rebel vessels. The bombardment did little damage. The palaces of Necessidades and Ajuda, and the public buildings about the Square of Commerce on the quay, were, however, hit often enough to secure their speedy surrender. The people of Lisbon who did not actively assist in the insurrection kept to their homes, and the defense of the old régime devolved upon the Municipal Guard and a remnant of the soldiers, who held out until Wednesday morning, altho they were without food or reinforcements. The number of casualties amounted to several hundred, but no accurate figures have been reported.

The plans of the revolutionists were carried out with great efficiency. Immediately upon the signal for the revolt detachments were sent out to hold or blockade all the roads leading into the capital, and the cables and telegraph lines were cut, so there was no communication with the outside world until the revolution was accomplished.

The visit of President-elect Fonseca, of Brazil, on the *Sao Paulo* had roused the republican sentiment of the Portuguese and so assisted in bringing on the revolution. A few hours after he had returned to the Brazilian warship from the Necessidades Palace, where he had been banqueted by King Manuel, the palace was bombarded and the King was a fugitive. With a few attendants King Manuel had slipped out of the back door of the palace while the insurgent soldiery and armed subjects were besieging its front, and was conveyed in an automobile to Mafra, a town about eighteen miles to the northwest of Lisbon. Here he was joined on Wednesday morning by the Queen Mother Amelie and the Dowager Queen Maria Pia, who had fled the night of the bombardment from the Ajuda Palace to Cintra.

The revolutionists made no attempt to prevent the escape of the King from Portugal, and were doubtless much relieved to get him safely out of the way. Manuel stayed at the Governor's House, Gibraltar, and the yacht has returned to Lisbon and surrendered to the new Government.

The republic was acclaimed by the people in Oporto and other Portuguese cities with much enthusiasm and with but slight disturbance, and the governors of the Portuguese colonies in Africa and Asia raised the flag of the new Government as soon as they found out what it was.



The Kings of Spain and Portugal

lice. About midnight the First Battery of Artillery, aroused by the people, seized their officers and trampled on the royal standard.

The revolutionary forces attempted to march down thru the center of the city by means of the Avenida da Liberdade, a parked street occupied by a fair, the booths of which were used as barricades. Here they met with a stubborn resistance by the Municipal Guards and such of the troops as remained to the monarchy under the command of the King's uncle, the Duke of Oporto.

The electric lights went out, and after several hours

National March of Portugal.

Tempo di marcia.

The musical score is written for piano and consists of five systems. Each system has a treble and bass staff joined by a brace. The key signature has one flat (B-flat) and the time signature is common time (C). The tempo is marked *Tempo di marcia.* The music is a march, characterized by its rhythmic patterns and chordal textures. The first system shows the initial melody in the treble and a supporting bass line. The second system introduces more complex chordal figures in the bass. The third system continues the melodic development in the treble. The fourth system features a more active bass line with frequent chord changes. The fifth system concludes the piece with a final chord in the treble and a sustained bass line.

The Provisional Government is composed of men of good reputation and ability. The president is Theophile Braga, a poet and philosopher, one of the most distinguished of Portuguese men of letters and a member of the several foreign academies. Dr. Alfonso Costa, Minister of Justice, is a professor in the University of Coimbra and a prominent lawyer. The Minister of Foreign Affairs, Dr. Bernardino Machado, was formerly professor of philosophy in Coimbra University, but deposed for his anti-clerical activity. Señor Machado was Portuguese Minister at Washington twelve years ago, when, curiously enough, he bore the title of Viscount de Santo Thyrsó, conferred upon

him by the Pope for the purpose of making a good impression upon the American people, and resigned by him after he returned to Portugal. He is wealthy and has distinguished himself in journalism and politics.

The Provisional Government expects to turn over its authority to a Government elected by the people within three months. Its policy is to promote decentralization in government and colonial autonomy; to rescue Portugal from its disgraceful illiteracy by enforcing a system of universal secular education; to secure freedom of speech; to reform the finances of the country and to separate Church and State.

Portugal: The Country and People

Apropos of the recent banishment of the young King of Portugal and the establishment of a republic in that country, the following from the New York *Sun* will be of interest to teachers and pupils:

Continental Portugal is a country of 34,254 square miles, an area a little less than that of the State of Indiana. Its length from north to south is approximately 360 miles, and its average width is a little less than 100 miles. Its population is about 5,000,000. Farms, pastures and vineyards are the direct source of maintenance for about two-thirds of the people. Mechanical industries of various kinds afford occupation for about one-fifth. About 40 per cent of the total area of the country is used for farms, pastures, orchards and vineyards, about 17 per cent is forest, and about 43 per cent is indicated as "waste land," although much of this is susceptible of fairly profitable cultivation.

The commerce of the country consists of exports amounting to about \$30,000,000 a year, and of imports amounting to about \$65,000,000. Without a break imports have considerably exceeded exports since 1865, the earliest year quoted in the record at hand. Exports show only a limited gain. The average from 1880 to 1895 was about \$25,000,000 a year, while the average for the last fifteen years has been about \$30,000,000, a gain probably represented by price increase rather than by larger shipments. In thirty years imports have nearly doubled. In a country like Portugal an increase in imports and comparative stagnation in exports tends to create an unwholesome condition economically and financially. About one-third of the imports are food substances, a percentage much too high for a country so easily capable of supplying nearly all of its needs from its own area. This is due in part to a lack of energy on the part of producers, and in part to the employment of antiquated implements and methods. The revenues of Portugal are about \$70,000,000 a year, a sum that seems decidedly excessive when considered in the light of economic conditions. About \$30,000,000, however, is required for the payment of interest on a huge national debt, a debt reported last year as amounting to \$865,000,000. Little wonder that the country is in trouble.

Once upon a time Portugal's colonies were many in number and vast in extent. There are still a number of dependencies widely scattered. The Azores and the Madeira islands are regarded politically as an integral part of the kingdom. The former cover an area of 922

square miles, with a population of a little more than 250,000 in 1900. A visit to Provincetown and other points along the New England coast easily suggests that since that time the islands must have been almost deserted. The Madeira Islands have 314 square miles, a quaint spot in the sea, vastly picturesque, swarming with tourists and foreigners attracted by the climate and scenery. The visitors afford a means of subsistence for a considerable part of a population numbering about 150,000. In India and in China Portugal holds colonial possessions aggregating about 9,000 square miles, with a population of nearly 1,000,000. These, like the African possessions, are the fragments remaining from an earlier time when the Portuguese navigators were as bold and venturesome as any that sailed the seas and Portuguese traders stood in the front rank of enterprising oversea merchants. On the east and west coasts of Africa, with sundry islands like the Cape Verde and Sao Thomé, the latter being one of the principal sources of the world's supply of cocoa, Portugal has dependencies covering an area of 800,000 square miles, and including a population of not far from 9,000,000.

Portugal's commercial domination in the Far East terminated about the middle of the seventeenth century. Its most valuable possession was lost when Dom Pedro I was crowned as Emperor of a free and independent Brazil. Its African colonies, vast in extent, are of doubtful value at the present time. A new government with a new system may succeed in an attempt to redeem the country, but its task will be one of exceeding difficulty.

English Slag Paving Blocks

"Scoria bricks" are slag paving blocks. They have been manufactured in England for many years and considerable quantities have been shipped to the United States since 1894. The bricks are manufactured from molten slag from the blast furnaces. The slag is drawn from the furnace into iron caldrons lined with fire brick. These are mounted on bogies, for transmission to the brick plant. The slag is poured from these caldrons into iron molds. These molds are made with a hinged bottom and are mounted on the circumference of a circular iron framework. This revolves and allows the molds to be filled separately. As the bricks solidify they are removed and placed in a beehive oven, where the residual heat anneals the whole of the brick.

Russian Emigration

By CONSUL-GENERAL JOHN H. SNODGRASS, Moscow

Russian emigration during 1909 reached the highest figures in the history of the country, the great majority leaving for Siberia, where, it is believed, 500,000 settle annually.

The emigration of peasants from central and northern Russia to Asiatic Russia has assumed enormous proportions since the Russo-Japanese war and the opening up of that immense territory by the Trans-Siberian Railway. Thousands of the poor from the Ural Mountains section travel by foot with their few belongings. Up to 1906 it is estimated that only 60,000 persons settled in the new country, but since then there has been a marked exodus from all parts of European Russia, and during the favorable seasons the railroads are unable to transport all applicants for tickets to Siberia. Special cheap rates are granted by the State railways to selected emigrants and their families, while a considerable number of peasants, in an endeavor to better their lot, travel at the ordinary rates.

In the prescribed districts, the State allots forty-one and one-half acres to each adult immigrant. Whole districts in European Russia have been denuded of their male population, and a traveler on the lines leading out of Moscow to the west, north, and east, will notice on his journey thousands at the stations along the way, with their few possessions packed up in sacks and handkerchiefs, waiting for the emigrant train to carry them to their new homes, where they expect living conditions to be more favorable to themselves and families.

VOLUME OF TRAFFIC TO AMERICA

On the other hand, a visit to the port cities on the days that the steamers leave for America will reveal another phase of the Russian emigrant who has been provided with sufficient money to land him safely in New York. No figures are obtainable in Russia as to the number of Russians leaving for the United States, but statistics furnished by the United States Bureau of Immigration show that 120,460 people whose last permanent residence was Russia, divided as follows, landed in America during the fiscal year ending June 30, 1909; Finns, 11,202; Hebrews, 39,150; Lithuanians,



An African Empress

Taitou, who was the consort of Menelik at the height of his power. The Abyssinians have proclaimed her deposition.

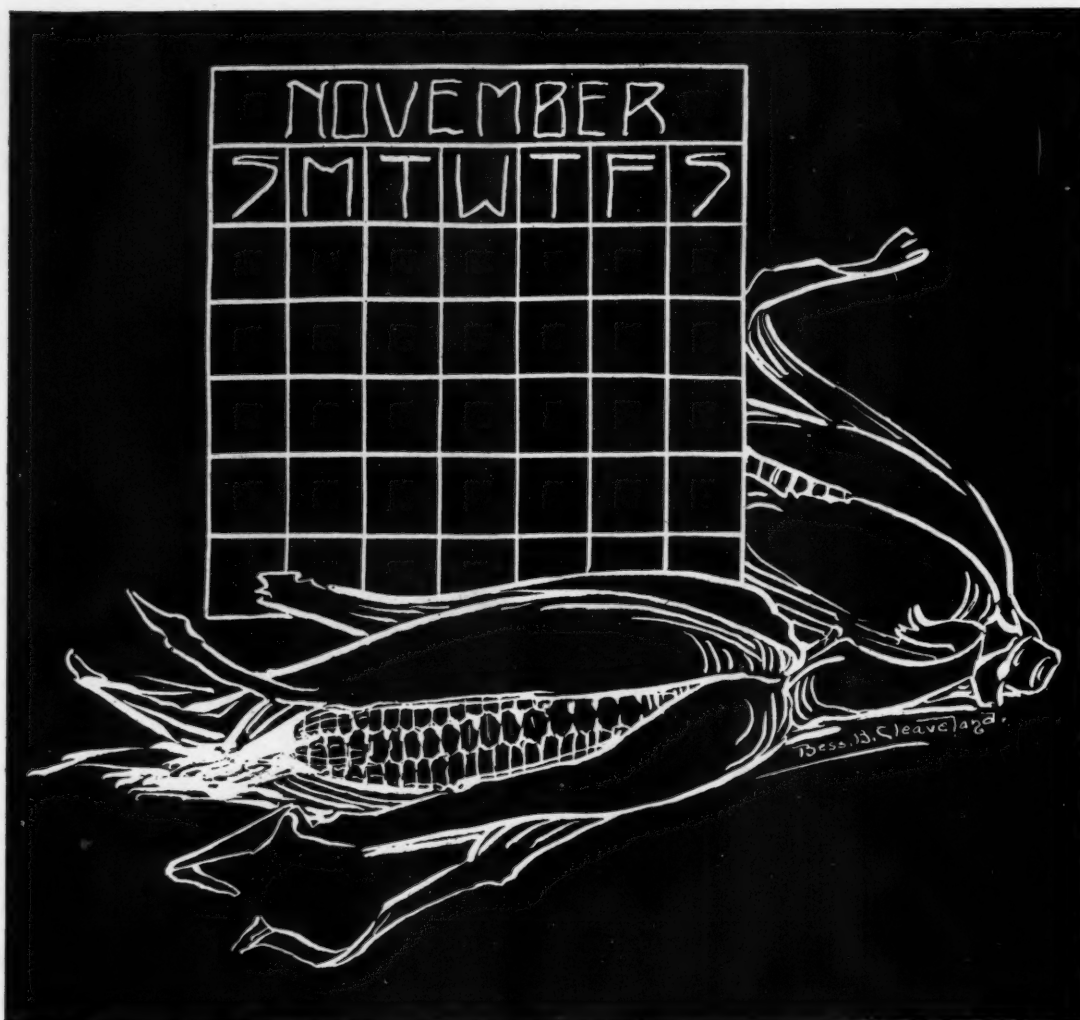
14,595; Poles, 37,770; Russians, 9,099; Germans, 7,781; others, 863. The majority of these emigrants were carried on German boats from German ports, but the Russian-American line from Libau to New York, which has recently made a strong bid for the emigrant trade, carried 14,478 steerage passengers for the calendar year 1909.

On account of the Government's firm attitude toward the Hebrews and the restrictions that limit their residence to certain "pales," there is a united sentiment among the latter to seek other places of habitation, the United States offering the most favorable conditions for settlement. It is expected, therefore, that the exodus of the Jews will increase from year to year.



The Tzar of all the Russias on Vacation

Opposite him, to his right, is his host, the Grand Duke of Hesse. The photograph was taken at the garden restaurant of Burg Munzenberg. The children of the Tzar are at the table to the right.



Notes of New Textbooks

There is no writer of textbooks in America better fitted to give boys and girls the American history they will enjoy and gain the most from than Dr. Jacques Redway. His "School History" has unique features. Its point of view is that of the twentieth century, and it treats of political and industrial problems as affected by geographic environment. The great economic questions of the day are treated, clearly and in an interesting manner. There are numerous aids to text in the way of illustrations, maps, footnotes, summaries, etc. The following are superior features of the Redway History: (1) The admirable maps and illustrations. (2) The clearness with which the influence of geographic conditions upon political evolution is shown. (3) The emphasis given to industrial development. Price, \$1.00. (Silver, Burdett & Co., New York.)

"Manual of Agriculture," for secondary schools, by D. O. Barto, of the College of Agriculture, University

of Illinois. This book represents the type of work on agriculture for secondary schools approved by one of the State universities that has been most active in promoting the study of agriculture in schools of all grades. Instead of being a compendium of all sorts of information, it presents the subject of soils and crop production in such a way as to make it take rank in scientific method and in educational and practical value with the other sciences that are taught in secondary

(Continued on page 124)

"Pink Eye" Conjunctivitis

"Pink Eye" (Conjunctivitis) Attacks the Eyes in the Springtime. It is Contagious and calls for Immediate Action. One Child with "Pink Eye" will Infect an Entire Class in a short time. Mothers and Teachers should be Prepared to Offer "First Aid"—Murine Eye Remedy. It Affords Prompt and Reliable Relief. Apply Murine Freely and Frequently. Write for Sample and Booklets. Murine Eye Remedy Co., Chicago.

Fun With Model Boats

In this country, tho a small boy may occasionally play with a little toy sailboat, this is not recognized as a "sport" as it is in England and France, according to *Our Times*. Over there middle-aged and old men, as well as youngsters, give their time to this recreation and get no end of pleasure out of it, as well as instruction.

Until the last year or so model sailing yachts were the favorite toy vessels. Some of these were got up in the finest style and cost considerable money, and almost as much interest would be taken in their racing abilities as if they had been full-sized boats. With sails and rudder skilfully set, it is wonderful how beautifully they would sail.

But recently, with the development of the big fast motor speed boats, the interest has centered in model motorboats, rather than sailboats. At a recent regatta on the lake on Clapham Common, near London, thousands of people came to see the fun, and among the many boats entered in the races every type of modern vessel was represented, from the big ocean liner and battleship to the latest "hydroplane" or water-skimmer, and record-breaking torpedo-boat destroyers.

The course measured 51 yards. The fastest boat of all was the *Folly*, a steam hydroplane, which made this distance in about nine seconds. She would have won the championship silver cup, but in one "heat" her propeller caught a weed and she lost so much time that *Sunny Jim*, a slower gasoline boat, finally beat her.

Several of the models were run by electricity, and these behaved the best of all, tho not quite so fast as the gasoline or steam models.

One, the *Silver Dart*, escaped from the men who were stationed to catch her, and spurted several times 'round the lake, just as if she was doing it merely for mischief, before they could gather her in. Another model, a beautiful steamer which must have cost a hundred dollars at least, plunged into the bank at high speed, and kept backing off and plunging forward time after time, until her hull was damaged and her machinery put out of commission.

These experiments showed the necessity of having a large and unobstructed course for the models to run on, so they will not hurt themselves in this way. British naval men are watching the model-boat sport with much interest, for the lessons learned from the behavior of models can often be applied to large vessels. In fact, all the leading

When Women Suffer

The trouble may arise from a variety of causes. The bodily organs are so sympathetic, that an injury to one may effect them all.

The debilitating effects of indigestion or the trouble caused by a torpid liver may bring about a general breakdown in health.

BEECHAM'S PILLS

offer a safe and satisfactory remedy for women's ailments. They not only purge the body of its impurities, but by regulating the bowels, kidneys and liver, tone up the entire system and ward off debility and illness. They

Women who value good health should read special instructions in every box.

Sold everywhere in boxes, 10c. and 25c.

Act Promptly and Thoroughly

naval nations now have experiment-tanks connected with their navy-yards, where exact models of proposed vessels are tried out, and any mistakes corrected before the full-sized boats are built, thus preventing the loss of much money.

The Pennsylvania Railroad Company's \$160,000,000 terminal and tunnel project at New York was officially declared completed on August 1. Two private cars, bearing President McCrea, the directors and other officials, left Philadelphia at 1:30 o'clock that afternoon, and two hours later shot from the tube

that runs under the Hudson River into the station that occupies twenty-eight acres of ground in the heart of New York City.

The terminal station, which will soon be thrown open to the public, is the largest in the world. The tunnel that leads to it, and which ultimately will give unbroken rail connection from all points in the South and West to New England, is an engineering wonder of steel tubes and concrete walls.

It costs about \$25,000 a mile to construct the ordinary steam railroad; the cost per mile of the New York terminal and tunnel has been in excess of \$600,000.

schools. The directions are definite and the exercises have been tested in a large number of schools and found within the range of capacity and equipment of the rank and file of classes. Price, 50 cents. (D. C. Heath & Company, Boston.)

"Metcalfe & Rafter's Language Series—Book Two," by Robert C. Metcalfe and Augustine L. Rafter, is based upon the new course of English adopted by the schools of Boston, and is designed for the higher grades of elementary schools. Part I, dealing with language, lays special stress on oral work, but contains also many interesting and stimulating written lessons. In Part II, on grammar, every new subject is introduced only after a preparatory review, and is developed by a few clear and direct questions leading to logical conclusions. The pupil who completes the book will be prepared to express his thoughts correctly, and to analyze a subject logically. Price, 60 cents. (American Book Company, New York.)

The songs selected for "Art Songs for High Schools," by Will Earhart, Supervisor of Music, Richmond, Ind., will stimulate the imagination and quicken the desire for a closer acquaintance with what is best in music. The collection includes old favorites of high-grade and many new compositions adapted to choral singing. There are many songs for particular occasions and seasons, as well as numerous chorus numbers of a general nature. Price 80 cents. (American Book Company, New York.)

"Nature Study for Higher Grammar Grades," by Horace H. Cummings, is designed to meet the needs of pupils in the sixth, seventh, and eighth grades of elementary schools. The subjects treated cover a wide range of observation and experience. The making and recording of observations, the writing of descriptions of experiments performed and of deductions drawn add to the interest of the work and help to establish scientific habits of thought and execution. Price, 75 cents. (American Book Company, New York.)

The "Century Spelling Book," by Aswell, Cook and Gilbreath, is intended to teach spelling according to current pedagogic methods without sacrificing the older principles that have been tested in the classroom. The words are well graded, chosen for their meaning and general use. Suggestions for study are numerous and well scattered thruout the book, which may be used from the fourth grade thru the school. (Rand, McNally & Co., Chicago and New York.)

Dr. Bruce R. Payne, of the University of Virginia, became convinced that spelling is a much more difficult subject than it is usually regarded. He invited five thousand teachers to send him lists of common words misspelled by their pupils. From these lists he selected 2,375 and out of them built a speller. "Common Words Commonly Misspelled" is the result. Its value will be appreciated because of its eminent practicability as a text-book. Price, 28 cents. (B. F. Johnson Publishing Co., Richmond, Va.)

Our Latest School Census

just completed, shows a heavy increase over the highest previous total of **REMINGTON TYPE-WRITERS** used in business schools. It shows a **2 to 1** Remington majority over any other typewriter.

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New York and Everywhere

Pennsylvania Railroad

BULLETIN

THE PENNSYLVANIA STATION IN NEW YORK CITY

The new Pennsylvania Station at Seventh Avenue and Thirty-second Street, New York City, will be opened to the trains of the Pennsylvania Railroad on Sunday, November 27.

On that date the through trains of the Pennsylvania Railroad between New York and Philadelphia, Baltimore, Washington, Pittsburgh, Cincinnati, Cleveland, Chicago and St. Louis will arrive and depart from the heart of New York City.

The Pennsylvania Station is located within one block of Broadway at Thirty-second Street, and within easy reach of all the leading hotels of Manhattan.

Downtown New York passengers may continue to use the Cortlandt and Desbrosses Street ferries and the Hudson Tubes at the Hudson Terminal, as practically all trains to and from Seventh Avenue and Thirty-second Street will have connections with the downtown stations by way of Jersey City.

Direct connections will be made in the Pennsylvania Station with trains of the Long Island Railroad to and from all points on Long Island.

On and after November 27 the main station of the Pennsylvania Railroad in New York will be the Pennsylvania Station at Seventh Avenue and Thirty-second Street.

Books for Teachers

Years of service in supervision of the schools of New York City have convinced Dr. Frank R. Rix of the need of a short, concise and practical manual treating of the training of the child voice. The results of his experience he has embodied in "Voice Training for School Children." The book is designed for the use of the class teacher. The needful directions for the teacher's guidance are set forth in straightforward, untechnical language. Dr. Rix has found that the class teacher, with the help and supervision of a competent special teacher, can obtain most satisfactory results in the care and training of children's voices. "Voice Training for School Children" will tell her how. If the instructions given in the manual are followed intelligently, children can be trained to sing with sweet, pure tone. Price, 50 cents. (The A. S. Barnes Company, New York.)

"Education in the United States," edited by Nicholas Murray Butler, consists of the twenty careful monographs, each written by an eminent specialist, on various phases of American education, which were originally planned as part of the American educational exhibit at the International Expositions held at Paris in 1900 and at St. Louis in 1904. The introduction by the editor sets forth the underlying principles governing American educational activity to the present time. Price, \$2.50. (American Book Company, New York.)

Professor Charters, of the University of Missouri, in his "Methods of Teaching," has added another volume to the increasing and really valuable books written for the benefit of the classroom teacher. The book is intensely practical; so much theory is included as is found necessary to emphasize the rational and scientific educational bases for the methods proposed. Prof. Charters treats these methods from the functional standpoint, discussing the means of arousing the appropriate needs and the conditions under which they are found present, and investigates the methods pursued by experience in satisfying these needs. A thoro study of this book, for it is one that cannot and should not be merely read, will surprise the teacher into discovering how much more really valuable he can make the education that is given to the pupil in the public schools. It is a book that claims a high place in every pedagogical library and reading circle. (Row, Peterson & Co., Chicago, Ill.)

"Intermediate and Grammar Methods" is remarkable for the amount of valuable material in the methods of teaching in the classes above the primary grades. It comprises discussions of the methods of teaching all the branches generally required in the upper classes. In addition, class and school management, the question of discipline considered from its functional standpoint, psychology, general and special methods in reading, literature, language and grammar, nature study, arithmetic, history and geography are broadly and carefully discussed. The teacher will find these books of great value in the preparation for higher licenses. (Interstate School of Correspondence, Chicago, Ill.)

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Singers and Speakers consider Brown's Bronchial Troches an invaluable aid for hoarseness, loss of voice or strained vocal cords. All sufferers from coughs, sore throat, bronchial or asthmatic troubles find them invariably beneficial.

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"The Iliad of Homer" has been translated into English hexameter verse by Prentiss Cummings. The translator, a man of ripe scholarship, has devoted the leisure of the past twenty years to preparing this version of the Greek poem, from which he has eliminated many of the digressions and episodes which are unrelated to the main story of the Iliad. This thoroly enjoyable work will be enjoyed by lovers of the Greek, everywhere. Price, \$3.00 net. (Little, Brown & Co., Boston.)

Joel Chandler Harris's "Little Mr. Thimblefinger Stories" has been brought out as a book of the "Riverside Literature Series," with illustrations by Oliver Herford. The Thimblefinger stories are told in the author's best style, and they have all the quaint charm of the Uncle Remus tales. It was a happy idea to arrange them in text-book form, and happy will be the children who can read them in school. Price, 40c. (Houghton, Mifflin & Co., Boston.)

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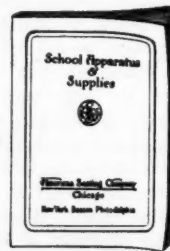
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English Juvenile Labor Exchanges

By VICE-CONSUL WILLIAM F. STEAD, Nottingham

The labor exchange recently established by the Board of Trade has proved so efficient in finding employment that it is now proposed to include in the lists of those registered children in attendance at day or evening schools who will shortly be leaving and seeking positions.

The local school attendance subcommittee, after conferring with representatives of the labor department of the Board of Trade and with the president of the Board of Education, has recommended that the education committee co-operate with the local branch of the labor exchange, subject to certain conditions, the most important of which are as follows:

That children attending school shall be registered for employment only at their school, and that if any such children make direct applications to the central labor bureau they shall be referred back to their school.

That lists of children and young people about to leave school shall be sent in to the education office at the close of each month by the head teachers or superintendents concerned, and that the local labor exchange manager shall have authority to make copies of these lists.

That all applications by employers for the services of children or young people leaving day or evening

schools shall be made direct to the labor exchange, and that employers making request to the education offices for such juvenile labor shall be referred to the labor exchange.

That in all cases of application from employers for the labor of young persons whose names are included in the lists above mentioned the labor exchange manager shall either request the education committee to send to him the names of young persons who appear suitable for the employment in question or shall forward to the education committee, for its remarks, the names of those candidates provisionally selected by the labor exchange as apparently suitable to fill the vacancies in question.

PURPOSE OF THE SYSTEM—NEWSPAPER COMMENT

The purpose of these regulations is to secure the advantages of co-operation between the school authorities and the labor exchange, and this can be best accomplished by requiring all children who apply for positions to do so only thru the school they attend, and all employers who need the services of such persons to make application only thru the labor exchange. Each school sends its list to the labor bureau, and thus the latter is retained as the central medium of exchange, avoiding the confusion and irregularities that might arise if employers inquired among the various schools for suitable assistants, and furnishing the bureau with a full list of all students in the city ready for employment.

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Motor Freight Line in Bermuda

Leading business men have lately formed a company to provide these islands with a more modern system of transportation, for which there is great need. At present heavy freight has to be transported to different parts by lighters and sailboats at high freight rates and with great delay in delivery. All other means of communication are in like obsolete condition, mails and passengers now being carried in omnibuses of an old and antiquated type. The company will be capitalized at \$100,000, and a bill for its incorporation will be presented at the next session of the legislature. It will be ready for business by January 1, 1911. The company intends using the combustion engine as motive power.

Industrial Notes from Mesopotamia

By CONSUL FREDERICK SIMPICH, Bagdad

By Government proclamation the French system of weights and measures has been adopted at Bagdad, superseding the Turkish system formerly in use.

The Philippine Government is seeking a number of Arab stallions from the Bagdad region to be shipped to Manila for breeding purposes on the Government's experimental farms.

Bagdad railway bonds to the value of \$23,360,000, representing the issue necessary for completing the

second section of the railway from Burigurlu to El Halif and eastward, were lately over-subscribed.

The British company which holds a concession for navigating the Tigris has added a fourth steamer to its fleet; this makes eleven boats that now ply between Bagdad and the seaport of Bassorah, at the mouth of the Tigris.

An American concrete-mixing outfit has been ordered by cable for use in the construction of an irrigation dam in the Euphrates, near Bagdad; over \$30,000 worth of steel piling has also been ordered from the Lackawanna Steel Company.

By Government proclamation the weight of loaves of bread has been regulated. Money exchange values were also fixed; the Turkish lira in Bagdad Vilayet is now taken at 102.60 piasters and the Medjidie at 19 gold ("sagh") piasters.

A number of American typewriters have made their appearance in Bagdad. An obstacle to their introduction has been the remoteness of a source of typewriter supplies, and the absence of persons who understand their care. Bombay, two weeks distant, is the nearest point where ribbons and supplies may be had, and the expense of shipping a machine to Bombay for overhauling is almost prohibitive.

A British importing firm, established at Bagdad and Mossul, recently cabled to America asking quotations on fifty reaping machines for use in the wheat fields of



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The *Gulick Hygiene Series* have been unqualifiedly indorsed by state boards of health, medical associations, anti-tuberculosis societies, and the various other organizations which are laboring to improve the health and habits of the young. Every book in the series is in perfect accord with the good health movement that is sweeping the country, and is therefore the most desirable text published for elementary schools.

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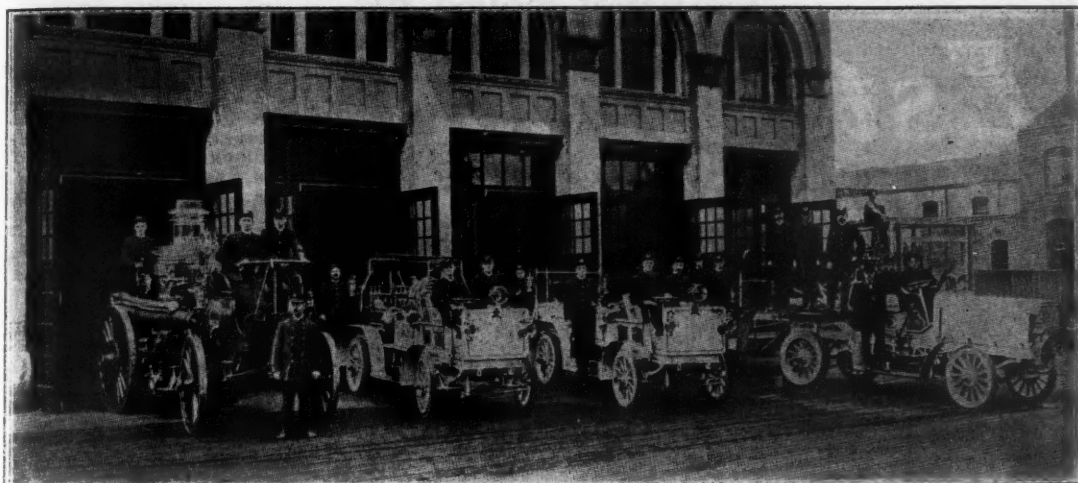
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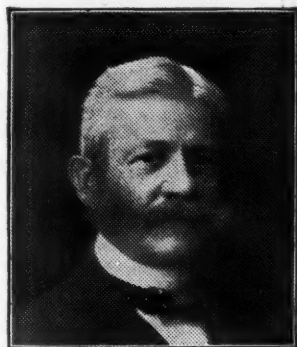
Automobile Fire Engines in Use at Vaucouver, British Columbia

northern Mesopotamia. A few such machines were carried across the desert from Aleppo to Mossul some years ago, and gave good satisfaction; when a railroad reaches Mesopotamia from the Mediterranean the wheat districts mentioned will become a market for modern machinery.

Sanitation in Brazil

Dr. Oswald Cruz, who did so much to transform Rio de Janeiro from one of the most unhealthful to one of the most healthful cities, is now in the Amazon Valley to wage a campaign against yellow fever, malaria, and other diseases.

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Queen Mary's At- tendants

A writer in *The Gentlewoman* (London) indicates the duties of the Queen's attendants and sketches those who are at present filling these offices under Queen Mary.

The ladies of Queen Mary's household are divided into four classes. First comes the mistress of the robes, then ladies of the bed-chamber, usually styled ladies-in-waiting, women of the bed-chamber, and maids of honor. Queen Victoria as a reigning sovereign had eight ladies of each class in her household.

The number retained by a queen consort, however, varies according to her pleasure and convenience. Queen Mary has at present in her service only one lady-in-waiting, three extra ladies-in-waiting, and four women of the bed-chamber. Maids of honor had not been appointed at the time of writing.

The office of mistress of the robes to a queen regnant is a political one and changes with the government; but that of a queen consort is in her own gift, and may be held for an indefinite period. The mistress of the robes must always be a duchess, whereas in case of a queen consort a widowed duchess may be appointed if more convenient.

The duties of a mistress of the robes are limited to state occasions. This high official is in the royal suite at courts, palace balls, and at the meeting of Parliament. At such times she stands behind the queen, and she walks behind her royal mistress in any state procession. Also when a procession drives thru the streets the carriage in which she is seated follows next after the State carriage of the sovereigns.

Her duties are many at the time of a coronation, and during the ceremony she is in close attendance on her royal lady. When their majesties are in London a mistress of the robes resides in her own house, and is conveyed to and from the scene of her duties in one of the royal carriages. But if the court is at Windsor she remains under the roof of Windsor Castle.

The Duchess of Devonshire, who has been chosen to fill this high post, is the eldest daughter of Lord and Lady Lansdowne. She is tall and fair, and dignified, fond of home life, and a devoted mother to her seven children. She has the grand manner and will no doubt be one of our leading hostesses, but on account of mourning Devonshire House has not as yet under her reign been the scene of any society entertainments.

(Continued on page 131)

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A Graded Course in Mechanical Drawing

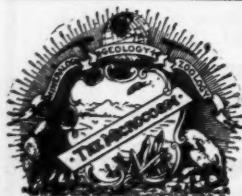
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These drawings have been planned especially for the busy teacher. They offer a practical means of presenting to the class a series of mechanical drawings which develop the idea of how Working Drawings are made, of accurate measuring, neatness and good arrangement. No models or solids are needed and the objects are such as can be made with few tools. These drawings make mechanical drawing practical in schools where it has heretofore been prohibitive because of a lack of just such explicit lessons as are found in this course.

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A lady of the bed-chamber to either a queen regnant or a queen consort must be a peeress. Her "wait" varies from three weeks to a month, according to the queen's convenience. And whether she is at her own home in London or staying at Windsor Castle, she must always hold herself in readiness and consider her time as entirely at her royal lady's disposal. She would be in attendance on the queen at balls, dinners, weddings, or any other formal entertainment, and, of course, at all state ceremonials.

Extra ladies of the bed-chamber are appointed according to the royal pleasure, but they have no salary and no fixed "waits" in attendance. Ladies who take office as women of the bed-chamber must have rank, but they need not be peeresses. Their "waits" are arranged in the same way as those of ladies-in-waiting.

Maids of honor are usually the ladies youngest in age in the queen's household. They must be either the daughters of viscounts or barons, or else the granddaughters of peers. The daughters of dukes, marquises, and earls are of too high rank for the position.

Maids of honor do duty in couples. The time of waiting is four weeks, and each maid is in attendance for that period about three times in the course of twelve months. When the court is in London the maids of honor reside in their own homes, and not at Buckingham Palace; but, as in the case of the other court ladies, a royal carriage is sent to convey them to and from the scene of action.

If a maid of honor chances to be a peer's daughter, she, of course, bears the courtesy title of "honorable," but if not she is invested with that style and title immediately after her ap-

pointment. And this she bears for life, whether single or married. And she receives a badge of office, which takes the form of a miniature of the Queen set in diamonds.

In everyday life this can be worn as wished, but when its owner is in waiting it must be attached to the left side of the bodice, and used as a decoration. And the badge is retained for life, and not given up on marriage or when leaving the royal service. The office of maid of honor is highly esteemed, as it gives much social status, and in the end often leads to a successful marriage.

Queen Mary has appointed Lady Shaftesbury as her lady of the bed-chamber. Lady Shaftesbury has many charms and graces, and as Lady Grosvenor's daughter it may be guessed that she is clever and cultured beyond the average. She likes books and reading, is fond of music, and when in town may often be seen at the opera and at concerts, both public and private. She is young and beautiful, and her face is framed in a cloud of soft gray hair, and she has a gentle and most attractive personality. Some time ago she went to South Africa to visit the grave of her husband, as he was by his own wish buried where he fell on Diamond Hill. Lady Airlie is fond of flowers, and at her Scotch home has made a garden of friendship, where every flower has been planted by a personal friend or a visitor of distinction.

The "Rule of Three"

This "Rule of Three"—it puzzles me

From morning until night,
And never I expect to see
A boy who works it right!

My teacher told the class to-day
That I could stand the test
Of ciphering, and he must say
My sums were done the best.

And so it is not at my school,
But here at home, you know,
I find that hard, perplexing
Rule
Which plagues and frets me so.

My Auntie, Grandpapa, and
Nurse
Each makes a "Rule" for
me—
Now tell me, pray, what could
be worse
Than this hard "Rule of
Three"!

—Children's Magazine.

Why Contagious Diseases Are So Quickly Transmitted In Schoolrooms

EDUCATORS are rapidly coming to a realization of the fact that "dust" is the principal cause of disease transmission among school-children. The floors in schoolrooms are bare, and when large numbers of pupils are assembled the constant motion of feet produces a continuous circulation of dust. From tests made with dust collected from schoolrooms and other places of public assembly, it has been found that with the dust were uncountable myriads of disease germs—bacilli of Tuberculosis, Typhoid Fever, Diphtheria, Pneumonia and other dangerous diseases.

To do away with this menace, to avoid the dangers of dust-poisoning, it is not only necessary to provide a system of ample ventilation, but also to treat the school floors in such a way that dust and germs cannot pollute the atmosphere.



Standard Floor Dressing has proved itself a perfectly satisfactory dust-preventive. By keeping the floors at a proper degree of moisture the dressing catches and holds every particle of dust and every germ coming in contact with it. Tests have been conducted to determine the quantity of dust and number of organisms which would settle on a given surface. Results prove that the dust from floors treated with Standard Floor Dressing is twelve times greater in weight than that collected from untreated floors. The inference is obvious—the balance of disease-laden dust in the rooms with untreated floors was circulating through the air, because even after settling on the floor every current of air would disturb it and start it afloat again. Another test proved that dust once settled upon a floor treated with Standard Floor Dressing remained there, and a bacteriological examination demonstrated that 97½ per cent. of all the disease-germs caught with the dust were destroyed outright.

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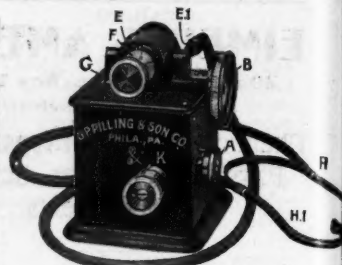
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Because of its simplicity and durability and the rapidity with which it can be used this apparatus will certainly appeal to specialists, teachers, aurists and psychologists.

At This Time of Year

The word CATARRH means literally to FLOW DOWN, and it has been observed that nasal catarrh has a downward course internally, and if neglected affects the lungs and brings on consumption. At this time of year, this form of catarrh is greatly aggravated. The discovery of the constitutional nature of this disease led to the administration of a constitutional remedy for it, and the best of which we have any knowledge is Hood's Sarsaparilla—it radically and permanently cures.

The Real Boy

I have no boys of my own, but I have had the care of them; I have taught them, I have employed them; I have had their confidence and their affection, and this thruout a score or so of grown-up years; and my conclusions are that there are very few bad boys; there are a few perhaps—rather more—very good boys; the vast majority of boys are just humanity, young and in the rough, but human, neither bad nor good, but sensible of kindness, brains, and justice in the commanding officer, as well as immensely anxious to do well.

For the past few years I have been perforce obliged to deal with a large number of office boys. Has any business man observed how few really bad office boys there are? There are to be found in offices many boys who are, unfortunately, sickly, or stupid or flighty or idle, but how few who are really, deliberately bad! I have employed boys who have come to me with the worst of characters from mother and teacher, labeled as "worthless," "contrary," "careless," "mischievous," "rude," and have found them, after a brief novitiate, industrious, painstaking, anxious to please.

And why? Why does not the average employer "have trouble with" the average boy? The reasons, as I know them, are as follows: The employer is "making good." If he has serious weaknesses the office boy is not permitted to see them; he is driven in spite of himself to respect "the old man." If the boy does not behave well the penalty is swift and certain—can this be said of home punishment? The atmosphere of the office is, as a rule, kinder than that of the home. This is a statement that will amaze many a mother, but I know it to be true. The office boy is rarely nagged; when he is scolded he is conscious that he has justly earned that or worse, and he is never physically ill-used. The casual slap, the everlasting shove, the steady stream of oral abuse of the overworked mother of the tenements stops at 8:30 a. m. Thereafter the boy is an individual with rights and duties, a human being, who gets all the respect and all the blame that is justly "coming to him." Best of all, when he isn't work-

(Continued on page iv)

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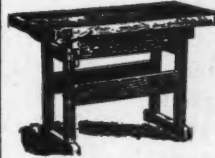
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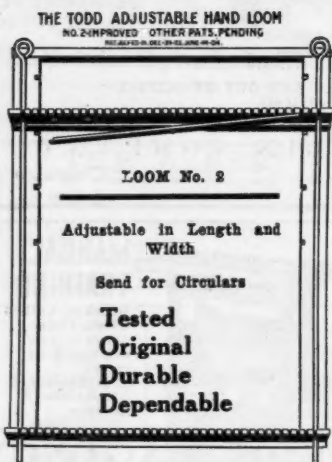
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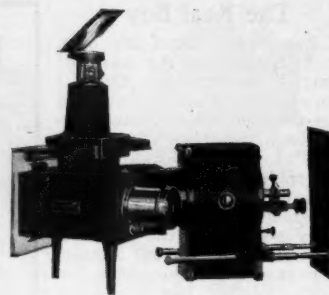
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ing he is let alone. He has, in his lunch hour, the freedom of the President himself. And he has, perhaps for the first time in all his crowded, worried, confused little life, somebody to look up to. The boy is surrounded by his superiors; he sees a number of busy, serious, courteous, grown-ups, who do not tell him to be industrious, serious, and polite, but unconsciously show him how to be. Their brusque kindness reassures him; he tries, oh, how hard! to win their approval; he is for the first time consciously measuring himself with and against the real world; how grateful he is for its slightest praise, how appalled at its reprobatation!

Cannot business methods be applied to the average boy in his home, to the fortunate (?) boy who is granted a longer freedom from the grind of daily toil? As I have said, I have known many boys, but I have known few that I have ever wanted to thrash; I have "licked into shape" very many of them; but I hope I have always done it with kindness, patience, and a timely appeal to self-esteem. At least, I have meant to, and I have had many a proof from the boys themselves, bless them, that they knew what I wished for them and that they appreciated to the full that I wished for them the very best they were capable of.

After all, a boy is a thing of some importance. He is not a toy, nor a menace, nor merely a nuisance—he is a creature that is going to be, and that very soon, a man of some kind, and of what kind it rests largely with us grown-ups to determine. Is it asking too much of humanity to hope that some day all fathers and mothers will afford the time and the patience and the affection and do for their own boys what is now being done for other people's boys by many an overworked business man and woman.—*New York Sun.*

Hudson Maxim has written a book on "The Science of Poetry and the Philosophy of Language." The original viewpoint of the book will no doubt arouse much interest and discussion in literary circles. It reveals, moreover, a new conception of the many-sided genius of Mr. Maxim. His fame is world-wide as the inventor of the Maxim gun, of smokeless powders and high explosives. Tho a producer of deadly engines of war, he is among the most ardent advocates of international peace and universal brotherhood. Funk & Wagnall's Company publishes his new book, which is illustrated by William Omerhardt, and sells for \$2.50 a copy.



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